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## CONTENTS AND SUBJECT INDEX

### SPECIAL ARTICLES:

**A Review of the Secondary Anemias.**  
Part I. By O. H. Perry Pepper, Philadelphia, Pennsylvania..... 233

**Heart Rate and Size.** By William Dock, San Francisco..... 236  
Discussion by Arthur Stanley Granger, Los Angeles; J. J. Sampson, San Francisco; Eugene S. Kilgore, San Francisco.

**Epilepsy.** By H. Hopkins-Detrick, San Francisco ..... 240  
Discussion by H. G. Mehrrens, San Francisco; Samuel D. Ingham, Los Angeles.

**Cancer of the Larynx.** By Simon Jeshberg, Los Angeles ..... 246  
Discussion by Rulon S. Tillotson, Woodland; Orville N. Meland, Los Angeles.

**Lead Intoxication.** By Ernest H. Falconer, San Francisco..... 250  
Discussion by Fred H. Kruse, San Francisco; Lester Newman, San Francisco.

**Endocervicitis—Its Etiology, Pathology, and Treatment.** By Thomas W. Bath, Reno, Nevada ..... 255  
Discussion by W. M. Edwards, Portola; C. F. Fluhmann, San Francisco.

**Epinephrin and Related Drugs.** By M. L. Tainter, San Francisco..... 259

**Agranulocytic Angina.** By S. Kahlstrom, Los Angeles..... 261  
Discussion by Arthur M. Hoffman, Los Angeles; Albert Soiland, Los Angeles.

**Giardiasis in Children.** By S. J. McClendon, San Diego..... 266  
Discussion by Herbert Gunn, San Francisco; Francis Scott Smyth, San Francisco.

**Chylothorax.** By Roscoe G. Van Nuys, Berkeley ..... 269  
Discussion by Robert A. Glenn, Oakland; Robert S. Stone, San Francisco.

**Galen: Greek, Medievalist, and Modern.**  
Part I. The Lure of Medical History. By Sanford V. Larkey, San Francisco ..... 271

**Masters in Medicine—William Henry Welch at Eighty**..... 275

### CLINICAL NOTES AND CASE REPORTS:

Infection with Craigia. By Dorothy Ann Koch, San Francisco..... 277

Dermatitis Venenata Due to Wigandia Caracasana. By Nelson Paul Anderson and Samuel Ayres, Jr., Los Angeles ..... 278

### EDITORIALS:

Sixtieth Annual Session, California Medical Association, San Francisco, Monday, April 27 to Thursday, April 30, 1931 ..... 280

Premedical Courses—Have the Science Subjects Been Overvalued..... 281

President Kinney of the California Medical Association Visits County Societies ..... 283

Further Comment on Public Health Legislation ..... 283

### MEDICINE TODAY:

Swollen Feet and Ankles. By A. Gottlieb, Los Angeles ..... 286

Tannic Acid Again. By Edmund Butler, San Francisco ..... 286

### PROGRAM—ANNUAL SESSION ..... 287

### STATE MEDICAL ASSOCIATIONS:

California Medical Association ..... 309

Woman's Auxiliary ..... 313

Nevada State Medical Association ..... 314

Utah State Medical Association ..... 314

### MISCELLANY:

News ..... 316

Much in Little ..... 318

Twenty-Five Years Ago ..... 318

Department of Public Health ..... 319

California Board of Medical Examiners ..... 320

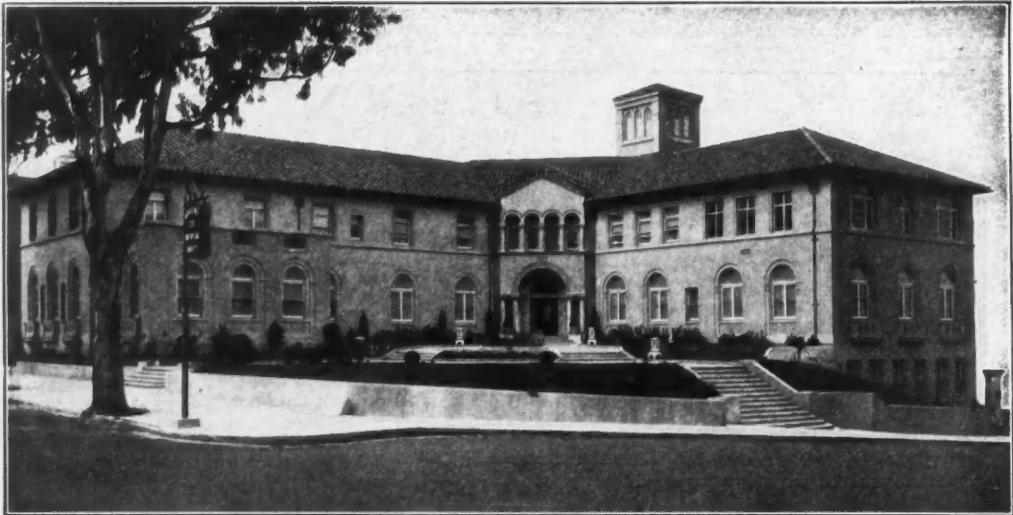
California Medical Association Directories ..... Adv. pages 2, 4, 6

Book Reviews ..... Adv. page 11

Truth About Medicines ..... 20

### ADVERTISEMENTS—INDEX:

Adv. page 8



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# CALIFORNIA AND WESTERN MEDICINE

VOLUME XXXIV

APRIL, 1931

No. 4

## A REVIEW OF THE SECONDARY ANEMIAS\*

### PART I\*

By O. H. PERRY PEPPER, M. D.  
*Philadelphia, Pennsylvania*

I WISH first to express my sincere appreciation of the honor done me by the invitation of the San Diego County Medical Society to deliver the annual Scripps Clinics and Lecture.

If it may be forgotten for a moment who tonight's lecturer happens to be, then I may say with perfect propriety that there is much value in such endowed lectureships. Much of the good which comes is, however, of a somewhat intangible nature and of a type difficult for anyone not trained in medicine or science to appreciate. This makes it all the more creditable to those from whose generosity such endowed lectureships have come. There is always benefit in exchange of ideas and in new contacts. Often one gains more at a medical convention from the informal chats in the corridors than from the presentations in the meeting hall. Always there is benefit for the speaker who visits a new group.

From still another impersonal angle an occasion such as this is inspiring in that it speaks for the unity of our profession from one end of our country to another. These larger aspects far overshadow any tangible asset of actual information which the speaker might be able to contribute.

Your committee has asked me to review the subject of secondary anemia. This I am glad to do even though it is a topic not very favorable for the new or the spectacular. But before discussing anemia—which concerns the red blood cells and their hemoglobin—let us review for a moment what is known about these two elements.

### THE RED BLOOD CELLS

The erythrocyte, although one of the smallest cells in the body, ranks high in importance. Its function is the transport of hemoglobin to and fro between the lungs and the tissues for the carrying of oxygen. Incidentally the erythrocyte, with its content of hemoglobin, plays a part in the acid-base regulation of the body, and the cell shows some specific relations to the electrolytes of the blood. The chlorid anion passes freely to and from the erythrocyte, the potassium kation remains chiefly within the cell, the sodium outside it. For the efficient accomplishment of its functions the erythrocyte must possess certain

characteristics; it must offer a wide surface area for diffusion, it must be able to pass through minute capillary spaces, it must be elastic to change its shape to suit its surroundings, and elastic also to permit of change of size with changes in its water content. Its surface membrane must permit the ready passage of oxygen and chlorids, it must refuse passage to certain bases. Its cytoplasm must hold the hemoglobin available for combination with oxygen and must allow the compensatory shifts which maintain the acid-base equilibrium as the hemoglobin shifts from its  $HbO_2$  form to its less acid  $HbO$ .

All of these requirements are met by the erythrocyte. Its structure is a lipoid framework with the hemoglobin carried in a sort of hydrophilic gel. The erythrocyte contains less water than most cells, having only about 60 per cent of water while the hemoglobin forms about 30 per cent of the cell or, including its protein fraction, 40 per cent. Its shape offers the greatest surface and all parts are equally near the surface. Its shape is the most efficient, but teleologically this leaves the variously shaped erythrocytes of other species unexplained (Lovatt Evans).

The total number of erythrocytes in the body is too great to discuss, but it has been estimated that the total surface area of all of the erythrocytes in the normal adult body approaches 3200 square meters.

In practice we deal with the figure obtained from the number of red blood cells in a cubic millimeter of blood, and it is interesting to note that it was only eighty years ago that Vierordt made the first blood count.

Life is compatible with greatly varying red cell counts, either far above or far below the normal range of between 4,500,000 and 5,000,000. When the number exceeds 6,000,000 the term "polycythemia" is employed; when the number falls below normal, anemia is said to be present. In the upper direction the number may increase to above 13,000,000 per cubic millimeter. It is said that only 13,900,000 normal-sized red cells can be introduced without pressure into a cubic millimeter, even if no plasma were present. The highest recorded count is 13,600,000, which is an increase over normal of about 160 per cent. Higher counts have been reported, but are probably incorrect—unless the red cells were far below the normal size.

In the opposite direction the count may fall to a mere 200,000 per cubic millimeter with life still present. In percentage figures this is a fall to four per cent of normal.

\* Delivered as the annual Scripps Metabolic Lecture at La Jolla, California, January 10, 1931.

Ed. Note.—Part II of this contribution will be printed in the May issue of California and Western Medicine.

### THE HEMOGLOBIN

*Hemoglobin*, the other element we must consider, consists of a simple protein, globin, in combination with an iron-containing pigment, hematin. The hemoglobin molecule is a very large one and a frequent simile is to the effect that if the erythrocyte were a mile in diameter the water molecules would be the size of peas and the hemoglobin molecules the size of baseballs (Jacobs). By virtue of the hematin, hemoglobin possesses a remarkable power for rapid combination with oxygen when exposed to air, and an equal facility for giving up this oxygen under the conditions existing in the tissue capillaries, notably, a low oxygen tension. It is related to other pigments existing in lower forms of life, some of them iron-containing such as hemerythrine, or with copper such as hemocyanin, all of them serving to carry oxygen from air or water to body cells, but hemoglobin far surpasses in efficiency. Hemoglobin is acid in reaction, but the oxidized form is seven times stronger as an acid than the reduced form. As a result, hemoglobin is an important buffer in preserving the reaction of the blood and so facilitates the carrying of carbon dioxide by the plasma from the tissues to the lungs.

The state in which hemoglobin exists in the erythrocyte is not clearly understood. It is not in solution; the quantity is far too great for that. Moreover, even the thinnest layers of erythrocytes are opaque, while hemoglobin solutions are quite transparent. It is not crystalline, but in amorphous state. If red corpuscles are put in hypertonic salt solution, they shrink through loss of water, but no hemoglobin leaves the cell; but if they are put in distilled water, they swell, suffer injury and the hemoglobin escapes. It is possible, however, to cut an erythrocyte in half while it is immersed in an isotonic solution and the hemoglobin will, nevertheless, not escape. Moreover, certain substances such as saponin, amyl alcohol, and ether, are able to destroy erythrocytes and liberate their hemoglobin by means of dissolving the lipid constituents of the stroma, chiefly lecithin and cholesterol. An excess of cholesterol can protect erythrocytes from the destructive action of saponin. It is therefore incorrect to consider the erythrocyte simply as a bag within which the hemoglobin is imprisoned. The conditions are more complex. The hemoglobin is at least enmeshed in a stroma network, and it is probably in a state of adsorption of loose chemical combination with some element of the stroma, perhaps the lecithin.

Hemoglobin combines readily with oxygen to form oxyhemoglobin. We can appreciate its efficiency in this if we recall that, of the quantity of oxygen carried by the blood, scarcely one-fortieth would dissolve in the available plasma at the temperature and partial pressure of oxygen existing in the lung alveoli. In other words, if the oxygen were to be carried solely in solution in the plasma, it would require 150 quarts of plasma. The oxygen combining power of hemoglobin is primarily

the function of the contained iron, of which there is normally in the blood only about 2.5 grams, and the oxygen capacity of the total hemoglobin of the blood is, therefore, only about one liter.

The total quantity of hemoglobin as well as the individual erythrocyte content varies with states of health and disease. In normal adults, 15.6 grams is an average figure of hemoglobin content per 100 cubic centimeter of blood with an erythrocyte count of 5,000,000 per cubic milliliter.

### COMMENT ON BLOOD EXAMINATION

It is still customary to determine both the number of red cells and the percentage of hemoglobin. When the hemoglobin is in the normal range the red cell count gives no useful information, but has been continued in routine use partly in ignorance and partly as a check on the less accurate hemoglobin method in use.

Outside the normal range, however, both red cell count and hemoglobin are helpful. In the higher ranges of true polycythemia the ratio of 100 per cent of hemoglobin to 5,000,000 red cells is not maintained and with a count such as 12,000,000 red cells, which is over 200 per cent of normal, the clinical hemoglobin estimation would probably not record over 170 per cent. This is probably due to inaccuracies in the method or to small size of the red blood cell. Such a discrepancy results in a low color index; a low amount of hemoglobin per cell. This discrepancy is apt to be less evident as one deals with lower degrees of polycythemia.

In the range below normal both red cell count and hemoglobin estimation are needed, for with an almost normal level of red cells the hemoglobin may be far less; again giving a low color index and low volume index. It would be a sufficiently safe routine procedure to determine the hemoglobin content and only if this were abnormal in either direction, make a red cell count. This would delay matters only a few minutes in those instances in which the hemoglobin content proved to lie outside the normal range, and would save time and expense in the great majority of instances.

### CLASSIFICATIONS OF ANEMIAS

*Anemia*.—We have now oriented ourselves a little with regard to the constituents of the blood whose reduction constitutes anemia, but before coming to a discussion of secondary anemia we must still dispose of so-called primary anemia either by a brief mention of it or by a definition of secondary anemia which will exclude the primary forms. This latter is difficult to do nowadays. We used to think it was easy; secondary anemias were those secondary to a discoverable cause; primary anemia was of undiscoverable origin.

About a year ago I gave a talk to a small county society near Philadelphia on this subject and I tried to give a classification of the anemias. After I had finished a nice old doctor came up and said he had enjoyed my talk very much because he recognized my classification as the same

as that which my father had taught him in the medical school and it cheered him up to know that there was at least one phase of medicine which had not advanced and left him behind in the fifty years since graduation.

If we wish a classification, it is true we have nothing very new nor satisfactory. We have to employ primary and secondary; hyperchromatic and hypochromic, microcytic and megalocytic, hemolytic and aplastic, but we are today much less tied to and interested in any classification than we used to be.

Of these various classifications of anemia, perhaps most interest today attaches to that by red blood cell size into the microcytic, or small cell anemia, and the megalocytic, or large-celled anemias. The methods for measuring the cells are not difficult on the whole, although direct measurement of a number of cells as suggested by Price Jones<sup>1</sup> is too time-consuming for practical purposes. The volume index of Haden and the various modifications of this method all derive the cell volume from simple hematocrit readings and red cell counts. Unfortunately there is no uniformity as yet in the terms in which the results are reported and this tends to confusion.

A considerable literature is growing up and there is a fair degree of agreement on a few points.

The long-held view that the average size of the red cells in pernicious anemia is above normal is confirmed by every observer, but there is some difference of opinion as to the degree to which this returns to normal with the disappearance of anemia under liver therapy. The evidence, however, favors the return to nearly a normal size.

Erythrocytes of the size of those seen in a relapse of pernicious anemia are said also to occur in sprue and, interestingly enough, in aleucemic leucemia.<sup>2</sup> Wintrobe<sup>3</sup> finds in this so-called macrocytic group that the cellular content of hemoglobin increases proportionately with the size of the cell, thus maintaining a normal hemoglobin concentration.

According to Wintrobe a normocytic anemia, with cells and hemoglobin content within normal range, results from acute blood loss, but Murphy and Fitzhugh find the cells larger than normal. This latter is perhaps reasonable in view of the rapid entry of water into the circulation to restore blood volume.

Microcytic anemia includes most instances of what we term "secondary anemia." Usually the normal hemoglobin concentration is preserved with the cell volume and hemoglobin content proportionately reduced. The more severe the anemia the smaller the size of the average individual erythrocyte. Wintrobe also describes a subtype of microcytic anemia which he terms the hypochromic in which, while the size of the cell is below normal, the hemoglobin content is even further reduced. This type is especially common as a result of chronic blood loss and includes the anemia of hookworm infestation.

In all bloods the young red cell is a little larger than the adult form,<sup>4</sup> so this does not help us.

After this digression let us return to the subject of classification.

Of course, the terms "primary" and "secondary" are still the most commonly employed, but today these two terms are each used in two quite dissimilar ways. Primary anemia is still synonymous with Addisonian or pernicious anemia notwithstanding the fact that there are several other anemias just as primary, and secondary anemia still implies a recognized or suspected cause. But the term "primary anemia" is also used to describe an anemia with high color index and the morphological changes which we used to consider peculiar to pernicious anemia. We now know, however, that a secondary anemia due, for example, to cancer of the colon may present this same picture. Similarly a secondary anemia is one with low color index even if the case proves to be one of the idiopathic anemias such as hemolytic icteric anemia. In our current literature, one must be sure to determine how the writer is using these terms in each instance.

#### ANEMIAS OTHER THAN SECONDARY ANEMIA

Let us now clear the way for our consideration of secondary anemia by a brief mention of the various special forms of anemia which, from an etiological point of view, might all be classed as primary.

*Pernicious or Addisonian Anemia.*—Pernicious anemia is, of course, the most important member of this primary group, although recent advances in its cure make us hopeful of the discovery of its cause. Today we no longer rest the diagnosis of pernicious anemia wholly on blood count and blood morphology. Neither the severity of an anemia, its high color index, nor the presence of megaloblasts are sufficient grounds for the diagnosis. We are far more interested in the history of remissions, glossitis, and paresthesias and in the discovery of an acidity and the evidences of posterolateral sclerosis. In the blood it is the red cell size and the response of the marrow to the feeding of liver or some other specific stimulant. A characteristic response of the marrow with a rapidly rising reticulocyte count is of great importance, but for practical purposes the result may instead be recognized in the red cell count.

That the white cell count is almost invariably low in pernicious anemia is diagnostically helpful, but pernicious anemia cannot be diagnosed on any one feature but only from a combination of history, physical examination, and laboratory data.

*Hemolytic Ictero-Anemia.*—This is the disease formerly called "acholuric jaundice" or hemolytic icterus. One's suspicion is promptly aroused by the youth of the patient, the splenomegaly, the yellow color of the skin, and the history of periods of fever, abdominal pains, deepening color, and increase of jaundice. Confirmation is obtained by finding urobilin in the urine, and in the blood a markedly lowered resistance of the red blood cells to hypotonic salt solution, and a constantly high percentage of young red cells. These latter, which we used to recognize by

their bluish staining in the spreads stained with Wright's stain, are today more clearly demonstrated by vital staining and named reticulocytes. The anemia itself may be absent or of any grade of severity, and sharp exacerbations occur with fever and increased jaundice. These are the deglobulization crises of the French writers.

*Sickle cell anemia* is in many ways analogous to hemolytic icteric-anemia. Both are found in young people and in both there is a familial tendency. In both, the red cells are abnormal: in one due to their feeble resistance to hypotonic salt solution, in the other in their curious tendency to assume a crescent or sickle shape in blood spreads sealed from the air or in blood kept *in vitro* with oxygen excluded. Both conditions may exist for long periods without anemia; both, however, are liable to attacks of abdominal pain, at which times anemia becomes more evident.

Sickle cell anemia occurs almost exclusively in the negro race; the individual may have a negative history, a normal physical examination, and a normal blood count. Even the sickling phenomenon varies in its demonstrability. Sometimes a greenish yellow tinge is present in the sclerae, sometimes unexplained leg ulcers are present. When anemia is present it is of the usual secondary type with low color index. It is important to remember that there may be no hint of sickling in the usual stained blood spread; occasionally enough of the cells will be abnormal in shape to suggest a further test, but as a rule the fresh blood, protected from the air, must be examined. Only by remembering this syndrome will certain cases of anemia be explained.

*Aplastic Anemia*.—Aplastic anemia results from toxic damage of the marrow as, for example, by radiation; from invasion of the marrow cavity by bone or tumor as in osteosclerotic anemia; and also as the end stage of any long chronic secondary anemia. Idiopathic cases also occur. The characteristic features are an anemia without any evidence of regeneration of red cells and sooner or later with evidence of a lowered production of granular leukocytes and of platelets. The individual adult red cells are normal, but in spite of the anemia no increase of reticulocytes is seen and no nucleated red cells are present.

Leukopenia or thrombopenia often join the anemia, and it is not to be wondered at that cases are readily confused with purpura hemorrhagica or with primary leukopenia.

*Chlorosis*.—What shall we say of this "green sickness of virgins" which we no longer see? It is the anemia whose blood count presents the most marked secondary features, and it is today explained as having been due to faults of hygiene and diet which are today seldom permitted. Its occurrence in young women, the greenish pallor of the face, the extreme reduction of hemoglobin with a red count which may be but little below normal forces the diagnosis on us occasionally. According to the classification by cell size, chlorosis would undoubtedly be termed a microcytic anemia of the hypochromatic type. I have seen but one unquestioned instance of this disease

which twenty-five years ago provoked so much discussion. In the volume on diseases of the blood of the Nothnagel System, edited in this country in 1905 by Alfred Stengel, pernicious anemia occupied 110 pages, but chlorosis had 197 pages with 285 literature references.

*Miscellaneous Hemolytic Anemias*.—There is a miscellaneous group of hemolytic anemias which we cannot yet classify; some occur in or after pregnancy, some in apparently normal individuals. Some may be instances of an unrecognized chemical poisoning or infection, some are instances of a previously undiagnosed hemolytic icteric-anemia which after a long period of latency without anemia suddenly develop hemolytic blood-destroying activities.

*Anemia and Splenic Disorders*.—Finally a word must be said of the anemia which is so commonly a feature in many diseases of the spleen. Sometimes the anemia is so severe that it dominates the picture, but it seems to me that it is unfortunate to hide our ignorance by grouping widely differing conditions under such a term as splenic anemia. Nor should Banti's disease or Gaucher's disease be considered as primarily diseases of the blood. The anemia which accompanies these conditions is a secondary type of anemia not to be distinguished from that occurring in a great variety of unrelated diseases.

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#### HEART RATE AND SIZE\*

##### THEIR IMPORTANCE TO THE PHYSICIAN

By WILLIAM DOCK, M. D.  
San Francisco

DISCUSSION by Arthur Stanley Granger, M. D., Los Angeles; J. J. Sampson, M. D., San Francisco; Eugene S. Kilgore, M. D., San Francisco.

UNTIL a century ago the physician's only physical guides to the state of the circulation were the rate and character of the pulse and the color and temperature of the extremities. New objective data have been introduced slowly—estimates of heart size from examination of the thorax, character of the heart sounds, and much later, arterial blood pressure and roentgen-ray silhouettes of the heart. Only quite recently have physicians felt much need for polygraphs or electrocardiographs and various tests of heart function. Vital capacity estimation, though suggested nearly a century ago, and repeatedly shown to be valuable, has never been widely used, and the same is true of another valuable physical index, venous pressure. At present in the laboratory stage, but likely to become a part of the complete examinations which are so widely practiced by specialists, are the measurements of volume flow of blood through the lungs and the

\* Read before the General Medicine Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

rate of flow in the vessels. It is not remarkable that clinical judgment has often been warped by overemphasis of the most recent or most fashionable type of examination, and that experimental workers have often used one measurement as sufficient or of paramount value in estimating the effect of various conditions and drugs upon the action of the heart. This is notably true of recent measurements of cardiac output, which were interpreted as though heart strain was directly proportional to the volume flow of blood.

In order that the physician may evaluate the need for various studies on his patients, it is well for him to bear in mind what is now known concerning the work of the heart, since this problem has been studied by able observers whose findings are in essential agreement. It is also well to keep before him what he really needs to know about the patient whose symptoms suggest circulatory disease. Briefly, what he must judge is how much work the heart is doing, how efficiently it is doing this work, and how fast this capacity for work is declining. In many patients he can estimate these facts more accurately from a proper history than from any combination of physical and physiologic studies. Yet he must form some decision as to the relative importance of physical data in indicating the state of the circulation.

#### HEART SIZE

*Heart Size as an Index of the Work of the Heart.*—The studies of Evans and of Starling proved that the heart is a pump whose efficiency at best is not over 25 per cent. In other words, the energy required is four to six times as great as the work done on the blood. When the blood pressure or volume of flow is unusually high or abnormally low, the efficiency falls off greatly. Under such conditions the energy spent may be ten to twenty times as great as the work done. There is, therefore, no constant relationship between the energy requirement of the heart and the aortic pressure or volume of blood flow. Under favorable conditions there may be a fairly constant relationship between the work done on the blood and the metabolic rate of the heart, but this is only accidental. These relationships are best seen in the experiments where the oxygen requirement of the heart is measured at varying levels of flow, arterial pressure and pulse rate. Results of such studies show that the only accurate and constant index of heart work is the diastolic heart size. This might have been predicted, since the energy liberated by voluntary muscle is mainly determined by the length of the resting fiber. An acceleration of rate, even though the blood flow and pressure are not increased, causes a proportional increase in energy needed. An increase in diastolic volume, whether to accommodate higher pressure or flow or because of poorer myocardial tone, increases oxygen requirement and energy expended by the heart.

These facts are graphically shown in Figure 1, prepared from the data of Starling and Visscher. In brief, energy requirement is doubled by 50 per cent increase in diastolic volume (in man this would mean a 30 per cent increase in area of the

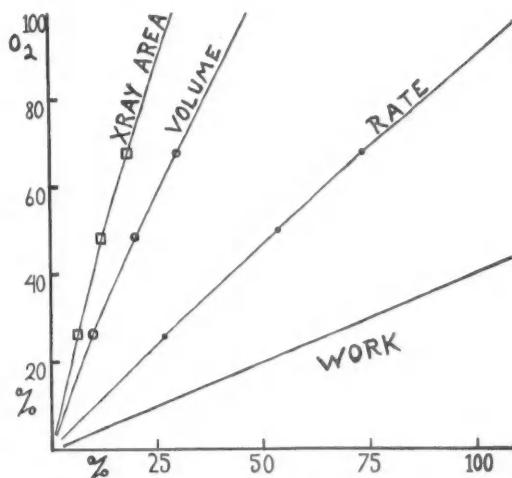


Fig. 1.—A schematic comparison of the increase in energy expenditure by the heart with increase in work done on the blood, or with increase in rate or volume of the heart. Per cent increase in oxygen used by the heart is plotted against per cent increase in area of the roentgen silhouette, the heart volume, the rate and the work per beat. Based upon data from experiments of L. Evans, and of Starling and Visscher, on the dog's heart. It is obvious that a 10 per cent increase in area of the heart silhouette indicates a greater need for energy than does a 40 per cent increase in cardiac output per beat.

cardiac silhouette), or by 115 per cent increase in rate, or a 250 per cent increase in cardiac work. Or to state these relations in another way:

A 50 per cent increase in area of the cardiac silhouette represents an increase of not less than 150 per cent energy liberated at each heart beat.

A 50 per cent increase in rate represents an increase of not less than 40 per cent in energy liberated by the heart per minute.

A 50 per cent increase in mean blood pressure or cardiac output per beat represents an increase of 0 to 40 per cent, with an average of perhaps 25 per cent, in energy liberated by the heart at each beat.

Thus the volume of the heart is important not merely because it bears a constant relation to cardiac effort, but because a given increase in volume is five to ten times more significant in indicating change in cardiac strain than is a change of similar proportion in the volume flow of blood. In heart failure the volume flow may diminish when heart size and heart strain are increasing.

#### CLINICAL SIGNIFICANCE

*The Clinical Significance of Heart Size.*—What do these facts mean when applied to the heart during exercise of the body, or during sickness? On exercise a vast increase in the width of the vascular bed takes place, so that with little or no rise in mean blood pressure the flow through the systemic vessels increases up to three times the resting volume flow per minute. Since the diastolic pressure falls, the heart empties more completely, and in spite of an increase of 25 to 50 per cent in the volume of blood expelled at each beat the diastolic volume is usually less than that of the heart during rest. Dietlen found

the areas of the roentgen silhouette reduced on an average of eight per cent during violent exertion, the pulse rate increased by about 95 per cent. From this, one may estimate that the heart, although propelling forward three times the resting volume of blood, requires perhaps 50 to 60 per cent more energy during violent exercise. Even in valvular and other types of heart failure, except in most severe decompensation, the cardiac volume decreases slightly during exercise.

During febrile illnesses the peripheral resistance is also low, the blood flow is rapid, and the blood pressure perhaps a little decreased. If the efficiency of the heart muscle is unaltered one would again expect a smaller diastolic volume, especially with the rapid pulse. However, the loss of efficiency of voluntary muscles during fever, with the characteristic weakness and muscle pain, suggests that heart muscle may be similarly affected. In cases of sepsis not complicated by erythema, lung involvement, or other cause for added cardiac work, Dietlen noted increases of as much as 25 per cent in the area of the cardiac silhouette. Taking into consideration the simultaneous increase in pulse rate, this means that the energy expended by the heart each day during such illness is two or three times greater than that in health. With milder illness the effect is less, but with diseases such as pneumonia, in which the pulmonary resistance is increased, the arterial oxygen content reduced, and the patient disturbed by fatiguing cough and labored breathing, even greater burdens must be imposed upon the heart. Obviously it is absurd to compare the cardiac burden imposed by exercise with that due to pneumonia even though the blood volume flow is greater during violent exercise. Even in pneumonia it is quite certain that the severity of bacterial invasion and not the mechanical strain imposed on the heart usually determines the outcome. The reserve power of the heart is very great even when depressed by toxins or taxed by overwork for many months. The "heart failure" which closes the scene in fatal infectious diseases is not due to added cardiac work but to loss of reserve strength and efficiency. The physician's problem is to decrease the intoxication rather than to decrease the work of the heart.

Of great interest are the conditions in which alterations in arterial pressure lead to changes in cardiac effort. The most careful studies indicate that in hypertension the rate and volume of flow are unaltered or slightly increased. The rise in pressure is, therefore, due to altered peripheral resistance, and this in turn to a disturbed vasomotor tone, since these patients maintain their pressure during exercise, after blood loss, and during infection just as normal persons do. They do not exhibit the compensatory bradycardia which occurs when drugs elevate arterial pressure. The increased work of the heart is due to increased resistance alone. The evidence at hand indicates that a rise in diastolic pressure from 80 to 160 millimeters Hg. will only lead to a 30 per cent increase in the energy expended by the heart. In the average hypertensive patient,

with a diastolic pressure of 110 to 120 millimeters Hg., the heart is using but 12 to 15 per cent more energy each day. This explains why we see some hypertensive patients whose long-standing disorder has caused little or no cardiac enlargement. The heart size of a patient who had hypertension for fourteen years, and a diastolic pressure of 130, was at the lower limits of normal size for his age and build. The roentgen-ray area, 92 square centimeters, was 20 per cent below the predicted average. The cause of hypertensive heart failure must be sought, not in the added burden, but in the underlying disease and its effect on coronary circulation and myocardial efficiency.

During anesthesia and operation the damage to the heart comes not from the altered blood flow, be it high or low, but from the effect on the myocardium of anesthesia, anoxemia, and altered acidity of the blood itself. The effect of low arterial pressure, due to shock, is also very important. The work of the heart is only slightly reduced by diminishing pressure and flow below a critical level, but the blood supply to the heart muscle is immediately dependent on the diastolic pressure. In shock, tachycardia and myocardial asphyxia from low blood pressure combine to produce some cardiac damage, although this is usually transient and recovery sets in as soon as the diastolic pressure is restored. This can be effected either by such physiologic treatment as transfusion or infusion of saline or acacia, or by the less reliable but more quickly available action of pressor drugs such as ephedrin or epinephrin in very small doses, and digitalis in full doses. All of these may reduce blood flow in normal animals, but this should not deceive us as to their value in shock, as it has misled those who regard blood volume flow as the sole criterion of circulatory efficiency. Reducing splanchnic and skin blood flow to raise aortic pressure is nature's way of maintaining a good cerebral and cardiac blood flow, and we should not hesitate, in circulatory failure, to use pressor drugs because they diminish flow through less vital areas. The action of epinephrin and related drugs, especially in large doses, is regularly followed by cardiac depression and a fall of pressure. Such drugs should not be used to the exclusion of or as substitutes for proper physiologic restoration of blood volume.

*Heart Size in Congestive Type of Heart Failure.*—While the consideration of heart rate and heart size variation occurring with infection or with altered blood pressure leads to a more correct understanding of the cardiac strain in these conditions, it is particularly in congestive heart failure that such studies offer a sound basis for opinion on etiology, diagnosis, and treatment. The etiologic implications are of particular interest in connection with the heart failure of hyperthyroid or hypertensive states. In young hyperthyroid patients and in many cases of hypertension, there is no increase in heart volume, and heart strain can be estimated directly from the increase in rate. From this it seems quite certain

that, while hypertension or hyperthyroidism may precipitate failure of an abnormal heart, they do not cause the normal heart to fail. The cause for heart failure must be sought in the involutional changes common in the age group in which hypertensive and hyperthyroid heart failure occur, or in some concomitant factor. In the case of hyperthyroidism the increased sensitivity of the heart to anoxemia or reduced coronary circulation is fairly well established, and in certain hypertensive cases vascular lesions, similar to those of the retina, seem to occur in the myocardium. Such changes are undoubtedly more important in causing heart failure than the increase in energy liberation by the heart.

It is well known to the physician that coronary occlusion or angina pectoris may cause disabling disease without there being any cardiac enlargement, and that many patients with valve lesions may have normal heart size. As a general rule, however, the individual whose heart is normal in size is not threatened with congestive heart failure, and such symptoms as he has are due to change outside the heart muscle (*e. g.*, in the coronaries, in the vasomotor regulation of peripheral vessels, etc.). It is doubtful if venesection, bed rest, or digitalis are ever justifiable for treating palpitation or dyspnea on exertion in patients with hearts of normal size and rate. This criterion is particularly valuable in children, in whom murmurs, sinus arrhythmia, and dyspnea on exertion appear during convalescence from fevers. So long as the heart muscle is depressed by the toxins or actually affected with myocarditis, rate and size are almost certain to be abnormally high. The useful and cheerful prognostic importance of small heart size is thus apparent.

Eyster and his co-workers have done much to help evaluate heart size in relation to age, height and weight, and their studies on heart size in disease are useful as reference in determining when heart size is pathological. I believe that many robust middle-aged men, especially those who do heavy physical labor, have hearts which are abnormally large according to Eyster's standards. Such individuals may develop heart failure in the future, but are often quite free from all evidence of heart disease, or of distress even on violent effort. For this reason it is well not to over-emphasize the diagnostic importance of slightly enlarged hearts. A normal heart size is compatible with most forms of heart disease, but does make for a good prognosis in all.

Very little is actually known as to acute changes in heart size, except that transient dilatation can be produced by drugs, or by such exercises as the Valsalva experiment, and decrease in volume by exercise, drugs, and blood loss. In acute pulmonary edema and cardiac asthma, the heart may actually be small shortly after the onset of the attack, but this is probably due to tachycardia from fright. A recent English report of sudden dilatation from exercise merely bears out what all of us have learned in comparing physical signs with roentgen-ray findings—a hyperactive heart

seems to be much larger than it really is. I have been interested in heart size in the chronic arrhythmias, for dilatation is not uncommon. In a recent case of flutter of some weeks' duration, with apex rates up to 140 to 150 per minute, the heart became much smaller after regular rhythm was restored. The roentgen silhouette area fell from 167 to 130 square centimeters, that is, from 176 to 137 per cent of the average for her build. The energy expenditure of this heart at the time of the first observation must have been three times as great per minute as it was later. The dilatation in these cases, as contrasted with the small hearts seen with the tachycardia of prolonged exercise, indicates that the efficiency is very low and also that the circulation of the heart itself is probably inadequate.

These considerations lead to the belief that the rate of the pulse and the size of the heart are our surest guides to the work and the efficiency of the heart. The blood pressure, the rate and volume of flow are but inconstant indices of the energy liberated by the heart each day, and they may be greatly altered with but little change in the need of the heart for fuel and oxygen. Venous pressure is a very reliable guide, for it closely parallels the diastolic heart volume. Even when followed with the roentgen ray, accurate measurements of heart volume cannot always be obtained. Nevertheless, the way to more accurate knowledge of the effect of disease and treatment upon the heart lies not merely in studies of flow and arterial pressure, but in closer attention to pulse rate and heart size. Already such studies have shown that drugs like epinephrin and pituitrin, which are not effective cardiac tonics, cause tachycardia and cardiac dilatation, while digitalis, which is more often effective in heart failure, acts to rest and restore the heart by decreasing its diastolic volume.

Stanford Hospital.

#### DISCUSSION

ARTHUR STANLEY GRANGER, M. D. (2007 Wilshire Boulevard, Los Angeles).—Doctor Dock has presented some very interesting and scientific data concerning the importance of the rate and size of the heart in evaluating the relation between the energy spent to the work done on the blood—in other words, the efficiency of the heart under different conditions. It has impressed me that the most important point to be deduced from his paper is that the general practitioner is able to ascertain by comparatively simple means certain facts concerning the heart, for which rather complex tests have been thought necessary. In this medical age of, perhaps, overspecialization, the physician interested especially in cardiology is apt to set a bad example to the more general practitioner by placing stress on certain intricate methods of diagnosis, so that the latter becomes more or less discouraged in his ability properly to handle cardiac cases. It is, therefore, a great relief to hear so well trained a man as Doctor Dock simplify certain of these diagnostic methods, and place greater importance on older and better known methods, which tell the same story. It has been a great inspiration to many of us to read the lectures of the late Sir James Mackenzie and to note the simplicity of his deductions as regards facts concerning heart disease. Various instruments of precision, such as the polygraph, electrocardiograph, and the x-ray, as well as certain laboratory procedures, have proved themselves to be of inestimable value in the diagnosis, prognosis and

indicated treatment of various heart disorders, and many such have become part of the diagnostic armamentarium of the cardiologist. For the past fifteen years I have been a staunch advocate of the usefulness of the electrocardiograph, and still believe it to be of great value in a clearer understanding of the mechanism of many types of heart abnormalities, but after all, there are but few cases in which a physician with a fair training in cardiology cannot gain by more simple means just as clear an understanding of what is happening in a given heart disorder without its use. Percussion, palpation and auscultation, together with sound reasoning, should never be neglected. We should feel indebted to Doctor Dock for this excellent paper and the very interesting scientific data presented.

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J. J. SAMPSON, M. D. (490 Post Street, San Francisco).—Doctor Dock's review illustrates the importance of recognition that heart size varies inversely to cardiac efficiency.

It is possible that the relations expressed by Starling and Visscher, and illustrated in Figure 1, may not apply to the damaged human heart muscle in the same manner as to the intact dog heart. Symptoms of congestive heart failure supervening when a damaged heart dilates may be attributed to the impossibility of the myocardium to do the work normally demanded by such chamber size increase.

The simplest clinical means of determining heart size changes, I believe, is the careful plotting of the apex impulse at each examination of the patient. Roentgen-ray determination is naturally the most accurate method, but unavailable for frequent use, and percussion is generally open to large personal error.

As has been implied by Doctor Dock, the heart size and its changes is a greater index of heart efficiency when correlated with minute volume output and its variations. Alterations of pulse pressure generally parallel stroke volume output in the same individual and the pulse rates complete a rough clinical estimate of the changes in the minute volume output.

This paper will serve a worthy purpose if it causes the clinicians to recognize these characteristic physiological adaptations to circulatory strains and thus to treat them more rationally.

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EUGENE S. KILGORE, M. D. (490 Post Street, San Francisco).—I follow Doctor Dock with appreciation in the general direction of his argument. The size of the heart in comparison with the size and type of patient is one of the important indices of cardiac condition—much more important than blood pressure or loudness of murmurs, which too often captivate the physician's attention. In order to use this index to the best advantage, however, its limitations must be clearly in mind. It is not quite true that normal heart size "does make for a good prognosis in all" forms of heart disease; for, as Doctor Dock states elsewhere, coronary disease of the most threatening sort is often associated with normal size. On the other hand, it is surprising to observe what stamina is often possessed by very large hearts, notably some of those due to rheumatic aortic incompetence, which carry on comfortably through years of hard labor.

But the principal obstacle to the clinical application of the heart size index is not found so much in these exceptions as in the practical fixing of normal standards and the measurement of the heart in question. Gross enlargement is obvious and is usually associated with other helpful data; but it is precisely in the borderline case where we should like to base an opinion on heart size, that it is often difficult to be sure what is within or just without normal limits. As in the case of heads or shoulders, there is considerable variation in heart size among normal persons of the same height and weight. Percussion, especially of thick chests, is much cruder than its exponents have been willing to admit. Teleroentgeno-

grams are much better; but the area of the silhouette bears to the volume only an approximately constant relation, because of the variation in shape of the heart. Furthermore, the silhouette, itself, apparently varies at times considerably according to the depth of inspiration and phase of the heart when the picture is taken. And, moreover, no two observers will trace the same silhouette from the same plate; and even the same observer will often vary considerably in two tracings from the same plate. To test the last point I submitted ten normal and ten abnormal films (picked at random) to a skilled exponent of the method, with request for the heart silhouettes to be traced on transparent paper. A week later, at my request, he retraced the same shadows on a new set of papers. A comparison of the two sets showed an average discrepancy of six to seven per cent and individual discrepancies as high as 25 per cent. Several of the greater discrepancies, however, occurred in the outlines of films which (on the second trial) he indicated as unsatisfactory for measurement.

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DOCTOR DOCK (Closing).—In the discussion there seems to be general agreement that heart size is one of the most important indices of cardiac function and efficiency. There is also emphasis on the fact that no one physical finding or combination of findings is an unfailing guide to the physician in estimating the danger of cardiac failure.

Doctor Kilgore rightly points out that even the most reliable index of heart size—the roentgen silhouette—may not be regarded as a purely objective record, but that its measurement introduces a personal or subjective error. If we reject unsatisfactory films, as we would unsatisfactory respiratory records of the measurement of basal metabolism, we are still left with a maximum error of 12 per cent and an average of 5 per cent in Doctor Kilgore's fifteen films. This represents personal error in outlining the upper and lower borders and using the planimeter. It is apparent, then, that under the best conditions measurement of heart size is subject to error of about the same magnitude as that encountered in measuring basal metabolism. In borderline cases a single observation is of little value, either for heart size or basal metabolism.

#### EPILEPSY\*

WITH REGARD TO THE INFLUENCE OF CALCIUM AND WATER METABOLISM UPON THE INCIDENCE OF SEIZURES

By H. HOPKINS-DETICK, M. D.  
San Francisco

DISCUSSION by H. G. Mehrtens, M. D., San Francisco; Samuel D. Ingham, M. D., Los Angeles.

ACH new decade through which we have passed has added new facts to our knowledge regarding the etiology and therapy of epilepsy. Years ago we depended upon sedative drugs, chiefly bromid salts and luminal, to bring about the cessation of the convulsive phenomena; but the degree of sedation sufficient to suppress seizures was found to depress mental function and inhibit normal development and activity.

Following the empirical discovery early in this century<sup>1</sup> that fasting resulted in the disappearance of symptoms, new fields for research were

\* From the Department of Neuropsychiatry, Stanford University Medical School. With the financial assistance of the Ruth Stern Research Fund.

<sup>1</sup> Read before the Neuropsychiatry Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

open to the scientific endeavor. Clinicians all over the country began to study the metabolic changes which were taking place under these conditions. The outstanding feature proved to be the development of a fatty acid acidosis; consequently Wilder<sup>2</sup> was led to propose the employment of high fat diets as a means of inducing the same type of acidosis. This new suggestion met with equally favorable results and transposed a difficult mode of therapy into one of practical usefulness. The question then arose as to whether clinical improvement was due to the sedative action of the anesthetic-like ketone bodies, or whether the acidosis *per se* was capable of bringing about such striking results. Peterman<sup>3</sup> was inclined to believe in the latter, for he was able to precipitate seizures by induced alkalosis following sodium bicarbonate feeding. Further investigation resulted in the general opinion that epilepsy associated with mental deterioration or obvious brain lesions did not respond to this treatment, while the so-called idiopathic group, especially if the onset occurred before the age of twenty, showed most satisfactory improvement.

Before long it was discovered that any type of acid-producing regimen was capable of bringing about the desired result, whether due to acid or acid-forming salt ingestion, rebreathing, or breathing a mixture rich in carbon dioxide. The convulsive disorder not only ceased but there followed a general depression of nervous response.

#### CAUSE FOR PERIODICITY OF ATTACKS

In attempting to explain the periodic nature of epilepsy, investigators were stimulated to study

the changes which occurred in these patients from time to time, and discovered that disturbances in the acid-base balance of the blood occurred with cyclic regularity. Alkalosis was found to develop up to the point of the seizure,<sup>4,5</sup> and during this phase alterations in the mineral metabolism and the water balance occurred. The ionized calcium dropped below the normal level. Water was retained in the tissues, urinary output became very low, and the excretion of sodium and chlorid ions was reduced. Along with these changes, heightened irritability of all of the nervous elements was observed.

Following the muscular exertion and apnea of the seizure, the opposite condition of acidosis set in, due to the accumulation of lactic and carbonic acid in the blood. There was sudden elimination of water from the body, with polyuria and increased excretion of sodium and chlorid ions. Polyuria following epileptic seizures had been described many years before, but until comparatively recently the mechanism for this frequent clinical observation was not understood.

As early as 1769 Stark<sup>6</sup> noted daily weight losses and increased urinary output during the administration of high fat diets, without arriving at a rational explanation. During his metabolism studies in 1903 and 1904, Benedict<sup>7,8</sup> demonstrated the same fact for starvation. More or less recently it has been made clear that this water loss (therefore weight loss) is due to the acidosis developing under these conditions.

Acidosis from any cause increases the output of water from the body by drawing fluid from the tissue cells. Fixed base leaves the cell, chiefly

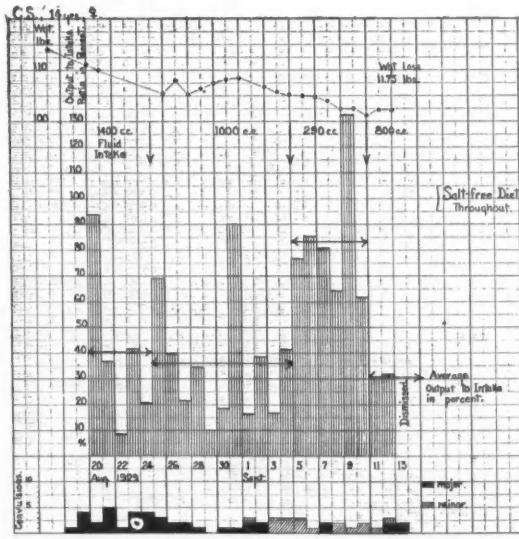


Fig. 1.—Italian girl, fourteen years; severe epileptic attacks for six years; history of instrumental delivery; second child in family. Fluid restriction and salt-free diet alone employed in treatment. At the point of lowest fluid intake (dietary plus free fluid) a definite rise in the ratio of urinary output to total fluid intake occurred. Clinical evidences of dehydration present at the same time. Grand mal seizures were replaced by petit mal without complete freedom from attacks at any time. Physical and mental depression made it necessary to resume fluid administration. Grand mal seizures recurred. Weight loss during observations was marked.

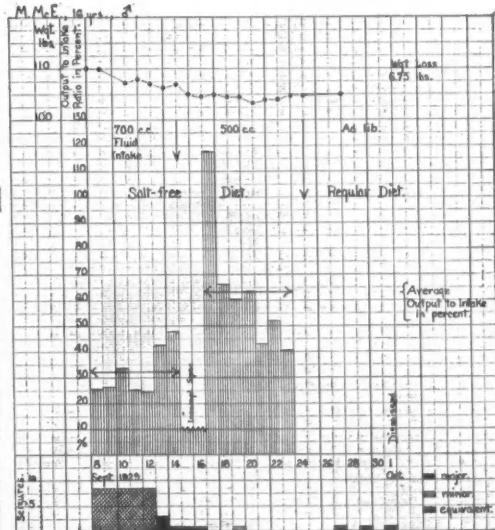


Fig. 2.—American boy, sixteen years, admitted to Lane Hospital in an acute epileptic equivalent state (acute mania). History of almost daily attacks since age of thirteen years. First child in family; poor heredity; mentally subnormal; chronic air-swallowing and regurgitator. Treated with fluid restriction and salt-free diet alone. Consistent weight loss. A rise in the proportion of urinary volume to total fluid intake occurred during the period of lowest intake. Seizures ceased except for one very light one, to recur again with the administration of water and unrestricted diet.

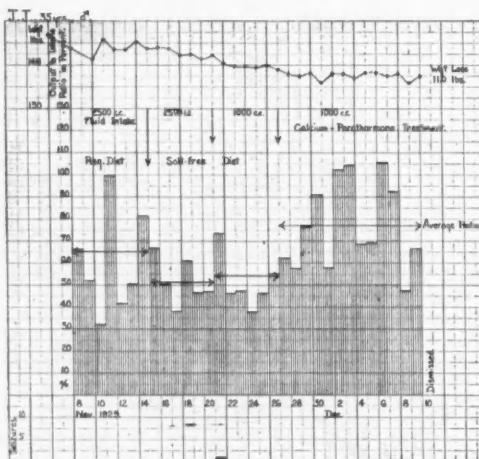


Fig. 3.—American man, thirty-five years. History of major epileptic seizures since the age of sixteen years. Family history of epilepsy. Patient psychopathic inferior type. Control observations made in order to determine the effect of the various factors of the treatment upon urinary output and weight loss. During the four periods only one factor was changed at a time. During calcium and parahormone administration a definite rise in the proportion of urinary output occurred. Weight loss continued throughout. At one time during the last period, patient felt as though attack were impending; experienced the aura of buzzing in the ear, but the attack did not occur.

sodium and potassium ions, to aid in the neutralization of the acid substances and, according to Gamble,<sup>9</sup> carries water along with it, in order to maintain the fixed base concentration of the cell at a constant level. Marriott attributes the water loss to salt diuresis following the migration of alkaline salts from the cells.

The frequency with which one sees heightened nervous irritability, increased reflexes, muscle

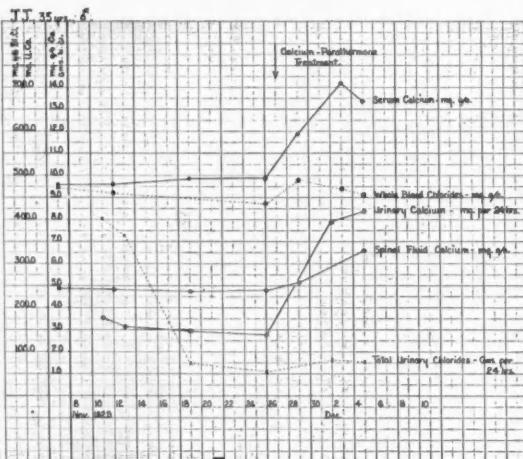


Fig. 4.—Same case as Figure 3, showing the chemical analyses made during the different periods. Marked fall in urinary chlorides occurred upon salt-free diet. Serum, spinal fluid, and urinary calcium determinations showed marked rise with the beginning of calcium and parahormone administration.

cramps and other signs of tetany in patients suffering with epilepsy impresses one with the close association between these two conditions.<sup>10</sup> Reports of epilepsy and tetany occurring in the same patient are numerous in the literature, and most writers agree that the same physico-chemical changes in the blood (alkalosis) precede the clinical manifestations of the disease. Tetany is explained on the basis of a reduction in the ionic calcium level below a certain minimum due to the development of alkalosis. Measures which raise the hydrogen ion concentration of the blood, thereby raising the ionic calcium level, or which

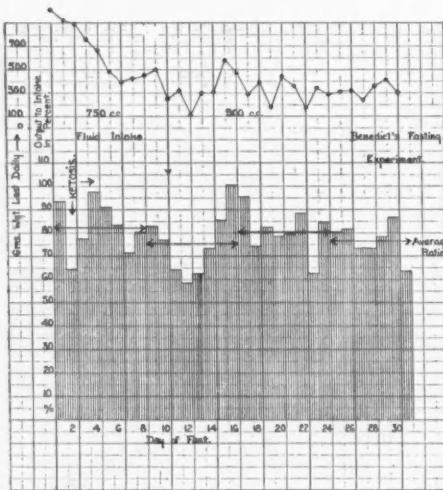


Fig. 5.—Figures taken from Benedict's fasting experiment and treated in a similar manner. Daily weight losses correspond more or less closely with the urinary output. A rise in the ratio of urinary output to total fluid intake is noted. There is some similarity between the changes which occur in water output under these conditions and under calcium and parahormone treatment.

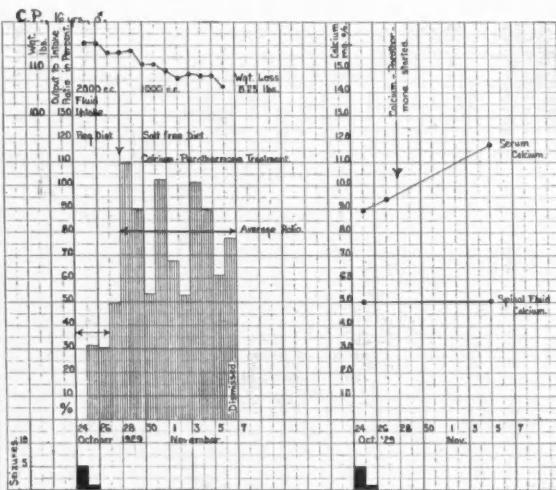


Fig. 6.—American boy, sixteen years. History of severe epilepsy since eighteen months. Fourth child in family. Alcoholism and migraine in father; insanity in near relatives. Patient mentally retarded and of psychopathic make-up. Seizures occurred on the average of every other day. Moderate fluid restriction, salt-free diet, and calcium-parahormone administration was followed by rapid weight loss, rise in the ratio of urinary output to total fluid intake, and a cessation of seizures. Has remained spell-free for several months at home.

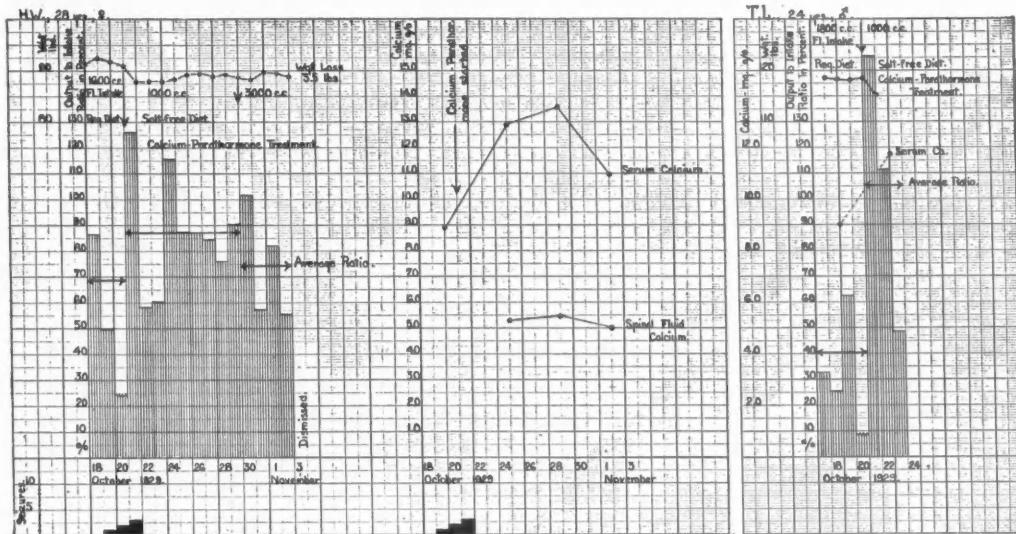


Fig. 7.—American woman, twenty-eight years. Onset of epilepsy during last three months of first pregnancy. History of childhood convulsions. Below average intelligence; very unstable, marked memory defect. Seizures had occurred several times a week, accentuated at the menstrual periods. During preliminary observation grand mal attacks appeared daily. These ceased with the institution of the special treatment, and marked subjective and objective improvement was noted during the remainder of her stay. Definite rise in the ratio of urinary output to fluid intake occurred. During the last four days three liters of water were supplied to determine her ability to handle large amounts of water under the same therapeutic conditions. A fall in the ratio occurred.

supply the body with calcium from the outside are equally effective in alleviating symptoms. An analysis of the successful treatments employed in epilepsy makes this relationship appear closer.

#### TREATMENT BY RESTRICTION OF FLUID INTAKE

During the past year we have entered a new era in the treatment of epilepsy. Fay<sup>11</sup> and, later, McQuarrie<sup>12</sup> have been able to arrest seizures by restriction of fluid intake alone, and have been led to reemphasize the importance of water metabolism in the etiology of this condition.

Looking back over the literature we find that Hippocrates,<sup>13</sup> in the fifth century B. C., described the "wet brains" of epileptics, and stated, "But whoever is acquainted with such a change in man and can render a man humid and dry, hot and cold, by regimen, could also cure this disease." After two thousand years have passed by, we have finally agreed that water has something to do with convulsive disorders.

Neurosurgeons<sup>14</sup> have noted for years that the brains of epileptic patients coming to operation appeared edematous and that excess subarachnoid fluid was present. In 1921 Zangemeister<sup>15</sup> proposed that the convulsions of epilepsy, as well as those of eclampsia and uremia, are due to hydration of the brain tissue. Rountree,<sup>16</sup> a short time later, arrived at the same opinion as the result of his research upon induced water intoxication in experimental animals. Elsberg and Pike<sup>17</sup> have been able to increase the susceptibility of cats to absinthe convulsions by inducing edema of the brain with intravenous injections of distilled water.

Fig. 8.—American man of twenty-four years. Grand mal seizures every month or six weeks, and petit mal several times a day for two years. First child, instrumental delivery; childhood convulsions. Patient feeble-minded, shiftless, cruel. Period of observation limited; however, a pronounced rise in the urinary volume in proportion to fluid intake occurred with the beginning of calcium-parahormone administration. Marked improvement has been noted since discharge.

If we review the changes which occur during dehydration with anhydremia, it is found that, owing to the reduction in the volume flow of the blood, oxidative processes are inhibited, and products of catabolism, chiefly acids, lactic acid (Marriott),<sup>18</sup> oxyproteic acid (Clausen)<sup>19</sup> and ketone acids accumulate in the body. In addition to this, concentration of the electrolytes occurs, as shown by studies in electrical conductivity and freezing-point determinations.

That a moderate degree of anhydremia results from fasting was shown by Benedict in 1907,<sup>7</sup> and although no reference is made to this subject in the literature, it is possible that the same change occurs during the acidosis of ketogenic diets, which is also associated with excessive water loss to the body. Anhydremia and dehydration may be induced clinically by restriction of fluid intake, by increasing the output through diuresis, catharsis or diaphoresis, or by a combination of both effects. The central depressant action that such a state exerts upon the nervous elements has been shown recently by Crisler,<sup>20</sup> and explains the frequently observed sedative effect of intravenous hypertonic solutions and of magnesium sulphate.

#### MINERAL METABOLISM AND WATER BALANCE

A study of the mineral metabolism of the body and its fundamental importance in controlling water balance should not be omitted in any discussion of this sort. Changes occur in conditions

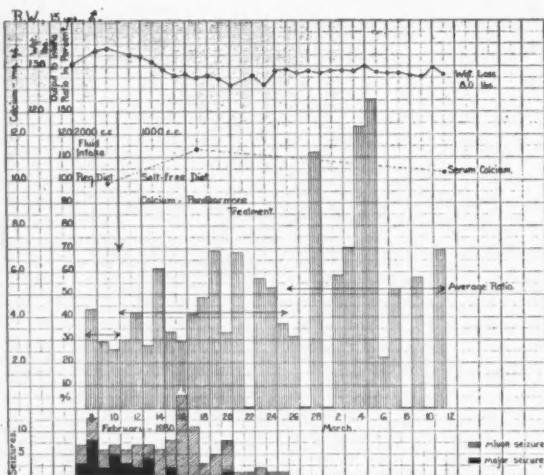


Fig. 9.—American boy, fifteen years. Clonic convulsive movements localized chiefly in right arm and hand, without loss of consciousness in an attack. Onset before two years of age. Chorea at eight years. Craniotomy one year before admission revealed thickening of arachnoid membrane. Response to fluid restriction of moderate degree, and calcium-parathormone treatment was most satisfactory. Seizures became less severe, then ceased. Weight loss and a rise in the proportion of urinary output occurred.

of acidosis and of anhydremia, in addition to water elimination, which seem to us to be of greater physiological importance. Readjustments in electrolytic balance occur, chiefly characterized by a marked rise in the available calcium ions. This rise is not only due to an increase in the hydrogen ion concentration of the blood, but is augmented by the concentration of the electrolytes.

Antagonism between the electrolytes has been shown by experimental biologists (Lillie, Loeb, and others) to control the ability of single cells or groups of cells to absorb and hold water. There are two groups of opposing ions, represented on the one hand by sodium and potassium, and on the other by calcium and magnesium (univalent vs. bivalent ions). This antagonism has been shown to have to do primarily with cellular permeability, hydration of tissue colloids, and with cellular irritability. Increased activity or irritability of the cell is explained by Bayliss<sup>21</sup> on the basis of increased permeability of the cell membrane, while Osterhout<sup>22</sup> uses permeability as a measure of the vitality of the organism. The bivalent calcium and magnesium ions decrease cellular permeability and, therefore, irritability, the univalent sodium and potassium ions exerting the opposite effect. Fischer<sup>23</sup> has shown that colloidal solutions absorb water under the influence of the univalent ions, calcium and magnesium, preventing this action. Bayliss notes that calcium favors the consolidation or stability of colloidal systems in opposition to the alkali metals which tend toward liquefaction. The increased irritability of unicellular organisms and of nerve and muscle tissue placed into pure sodium chloride solution has been observed by many workers, the addition of small amounts of calcium or magnesium preventing this change.

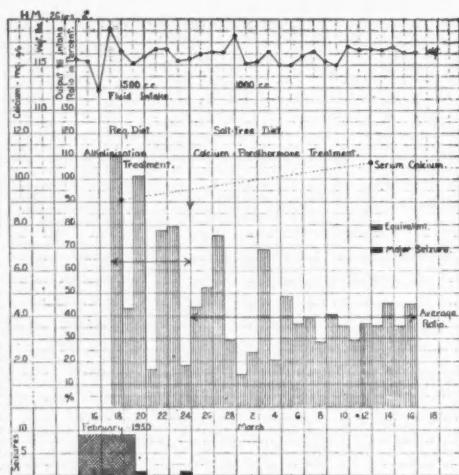


Fig. 10.—Russian man, twenty-six years. Epilepsy appeared following encephalitis at fifteen years. Normal development before this time. Attacks more frequent and severe in winter months (several each week); only one every one to three months during summer. Admitted to Lane Hospital in an epileptic equivalent state with pronounced mental confusion and disorientation. Alkaline therapy was followed by the precipitation of a typical major seizure with permanent disappearance of the equivalent state. Institution of the special treatment resulted in the disappearance of the seizures, and the marked mental and physical improvement which occurred was a most striking observation.

Hydration of the brain cells is a function of the permeability of the cell membranes. Haldé<sup>24</sup> demonstrated that calcium and magnesium inhibited the absorption of water by brain tissue *in vitro*. By increasing the permeability of the brain to acid fuchsin by trauma or asphyxia, Syz<sup>25</sup> was able to lower the threshold of experimental animals for convulsions and to increase the activity of all of the nervous elements.

We have made use of the properties of the calcium ion in an attempt to arrest the symptoms of epilepsy. Disturbances in the calcium metabolism have been shown to exist in uremia and eclampsia; and in those cases with pronounced edema and convulsions the calcium of the blood was found to reach lower levels.<sup>26</sup> Bigwood<sup>27</sup> proved to his satisfaction that patients with epilepsy showed a marked fall in the ionized calcium of the blood just before the seizure, but there seems to be disagreement upon this point among writers. If we concede that alkalosis develops during this stage, we must agree that the ionized calcium is reduced, whether evidences of this change are found in the total calcium determinations or not.

Careful search through the literature reveals that calcium has been used for many years in the treatment of epilepsy. Osler<sup>28</sup> and Starr<sup>29</sup> advised its use without discussing its beneficial properties. Littlejohn<sup>30</sup> and, later, Ohlmacher,<sup>31</sup> brought about complete cessation of seizures after a period of four months of calcium lactate ingestion. It is noteworthy that of the bromid preparations, calcium bromid has been found to be the most effective in epilepsy. Graves<sup>32</sup> advocated the use of calcium lactate in acute epileptic

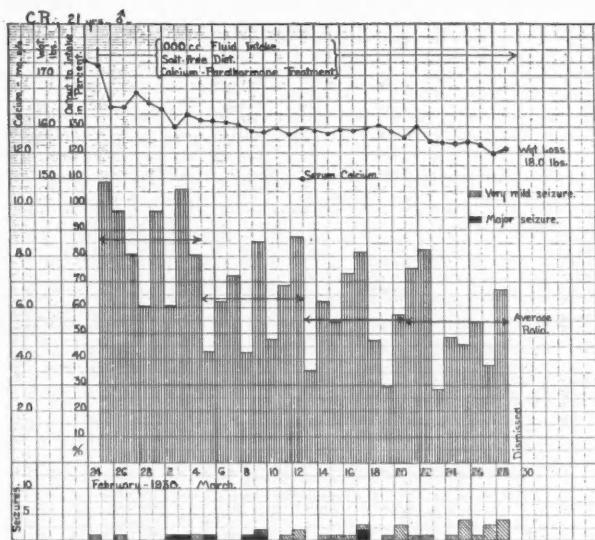


Fig. 11.—American boy, twenty years. Epileptic attacks of four years' duration. Family history of insanity. Patient of psychopathic make-up. Question of chorea at ten years. Seizures one to six times daily, marked variation in intensity. Most severe attacks nocturnal. Under special treatment marked weight loss occurred. The ratio of urinary output to total fluid intake was high at the outset. Seizures moderated in severity, but became more frequent. Since returning home, however, these minor seizures have decreased appreciably in number.

mania, noting marked improvement after ordinary sedative therapy had failed.

Recent observers assume that clinical improvement in these patients following restriction of fluid intake is due primarily to the elimination of water from the central nervous system by lowering the water content of the entire body. They have attributed the value of starvation, ketogenic diets and acid feeding to the increased elimination of water following their use. Our observations would indicate that the important feature is the change in the mineral balance which these measures bring about, the water being of secondary importance.

The ability of the calcium salts to rid the body of excess fluid and also to decrease neuromuscular irritability is a well-recognized fact. Potent extracts of the parathyroid glands have been shown to increase the efficiency of calcium salt administration by increasing the ionic calcium of the blood and tissue fluid to a high level in a relatively short period of time. Collip<sup>33</sup> produced a profound degree of dehydration and anhydremia in experimental animals by its use alone.

Our patients have been given large doses of calcium lactate daily for a prolonged period and daily injections of parathormone (Collip) for the first few weeks. Ingested fluid was restricted to an amount well tolerated by the patient, and large amounts of cod-liver oil were given to increase the absorption of calcium from the intestinal tract, as well as to raise the ionic calcium level. By this means we have been able to raise the serum calcium to the desired degree. Salt-free diets were used not only to decrease thirst, but to remove the antagonistic action of sodium and chlorid ions toward the calcium.

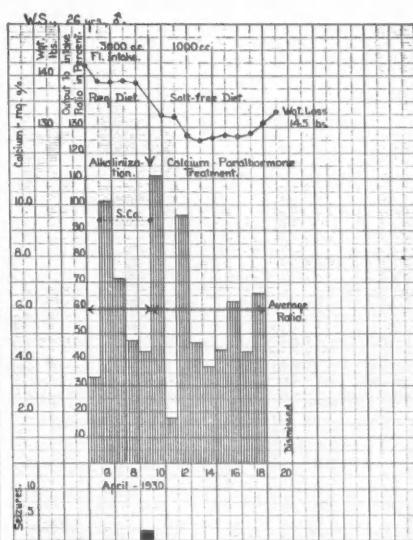


Fig. 12.—American man, twenty-six years. Epileptic seizures since ten years. One to three grand mal attacks daily without luminal. While taking drug, averaged one each month. Mentally retarded, extremely self-conscious and retiring. Alkaline therapy was followed by two grand mal seizures. Luminal was withdrawn and the special treatment instituted. No seizures appeared and the patient became much more alert and cooperative. Weight loss was marked, but the ratio of urinary volume to fluid intake remained unchanged. The preliminary alkalization period showed some water diuresis following intake of three liters daily. With sudden restriction to one liter daily with the beginning of the calcium-parathormone treatment, however, the urinary output remained at the same moderately increased level.

The resistance of the tissue cells for water has presumably been increased by decreasing the permeability of the cell membranes. Saline disappearance tests<sup>34</sup> applied to the skin showed delayed absorption; the time becoming two to three times longer than before the treatment was started, indicating that the avidity of the tissues for water was much below the normal level. A general decrease in nervous irritability was noted. A rise in the ratio of urinary output to total fluid intake occurred and rapid weight loss followed, despite adequate caloric intake. Aside from the disappearance of the convulsive phenomena the most impressive observation was that of general physical and mental improvement. The patients became alert and active, skin color improved, the appetite increased, and their subjective feeling of well-being formed a striking contrast to their former state.

Contrary to previous opinion with regard to the forms of epilepsy improved by treatment, the regimen outlined in this paper appears to have been equally effective in all types of the condition, whether idiopathic or traumatic.

Our conception of the problem would lead us to predict that convulsive disorders are physiologically upon the same basis, and that the application of the same principles of therapy would be met with favorable clinical results.

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## DISCUSSION

H. G. MEHRTENS, M. D. (Stanford University Hospital, San Francisco).—It has been a great pleasure to observe the clinical results reported by Doctor Detrick in the paper we have just heard. We are all familiar with the epileptic patient treated with sedatives, particularly with the irritable disposition which was so frequently confused with the epileptic personality. Doctor Detrick has told you about the amelioration and cessation of convulsive attacks under the calcium and water limitation methods. It seems to me that the change in personality is even more noteworthy because, while absence of attacks may be im-

portant, if that is all that can be accomplished, the triumph is not very great. I have been especially impressed with the improvement in disposition and attitude toward life's problems after some weeks of treatment. It suggests that possibly what we have in the past considered as epileptic temperament may be capable of modification. It is even conceivable that other abnormal mental states may be affected by modification of the intracellular activity. I feel that this phase of the work gives most promise for the future.

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SAMUEL D. INGHAM, M. D. (1252 Roosevelt Building, Los Angeles).—The problem of epilepsy has always been a baffling one and until recently little real progress has been made in solving it. The disappointing outcome of various theories regarding it and treatments enthusiastically advocated for it have caused a healthy skepticism of new theories and treatments. It appears, however, that there is reason to be more hopeful for the future in view of the newer knowledge of physics and biochemistry. We are learning to think of physiologic and pathologic processes in terms of ions, electrolytes, colloids, surface tension, etc., in relation to cell activities and so enter a rich field for research. At present it appears that fluid retention in the brain tissue is an important condition in epilepsy and that dehydration is of distinct value in its treatment. Why fluid retention should occur in the brain is not apparent, but it is obviously the result of some disturbance of nature's mechanism for maintaining the normal equilibrium. One possibility would appear to be the damage to tissue from trauma and inflammation since the histories of epileptics abound with episodes suggestive in this direction. The phenomena of allergy also come in for consideration in this connection as well as the important biochemical functions of the endocrine glands. But little is known of the automatic regulating mechanisms inherent in animal organisms which maintain within the limits of normalcy the various physical constituents and the numerous essential activities. It may be assumed, however, that such regulating mechanisms do exist, that at least some of them are located in the central nervous system, and that they operate to a large extent through the vegetative nervous system and endocrine glands. The clinical case histories presented in this paper are interesting and significant, and they are the more encouraging in view of the fact that definite clinical improvement has been obtained over prolonged periods even when sedative drugs have been withdrawn. The personality improvement, as Doctor Mehrten has observed, is of especial significance, as it would seem to indicate not only a reduction of the cerebral irritability but of increased normal activity of the higher brain functions.

## CANCER OF THE LARYNX\*

By SIMON JESBERG, M. D.  
Los Angeles

DISCUSSION by Rulon S. Tillotson, M. D., Woodland; Orville N. Meland, M. D., Los Angeles.

A SURVEY of the situation of cancer of the larynx in Los Angeles would seem to indicate that there is a big discrepancy between the actual number of cases of laryngeal carcinoma and the number of patients who are given adequate treatment.

This situation exists, I presume, in much the same degree in other similar communities. This paper is presented in an attempt to review the

\* Read before the Eye, Ear, Nose, and Throat Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

problem of cancer of the larynx, with the earnest hope that it may stimulate interest in furthering the solution of the problem.

#### EARLY DIAGNOSIS DESIRABLE

Cancer of the larynx presents symptoms that should lead to early diagnosis. Yet, this condition is rarely recognized until it has existed for some time; eleven and one-half months is the length of time quoted as the average of one hundred cases, from the earliest symptoms to the diagnosis.<sup>1</sup>

Allow me to quote an excerpt from an eminent authority on the subject, Sir St. Clair Thomson:<sup>2</sup>

There is no internal region of the body where cancer gives such early warning of its occurrence, where it is so slow in evolution and where it so long remains localized, as on a vocal cord. In no other internal situation can surgery secure such enduring freedom from the disease.

Intrinsic cancer of the larynx generally attacks the area of the vocal cords, or the subglottic region. I have never seen it originate on the ventricular bands, or in the interarytenoid regions. It might as well be called "chordal cancer." Where it is not that, occasionally it originates in the ventricle of the Morgagni, or in the more vascular and glandular tissue of the subglottic area. Chordal cancer always declares itself by an early and persistent hoarseness.

Carcinoma of the larynx is intrinsic when it arises within the body of the larynx, that is, in the cords, the subglottic area, or the ventricles. It is extrinsic when it arises on the epiglottis, the upper margins, or the lateral surfaces of the aryepiglottic folds, or on the posterior surface of the cricoid.

Extrinsic carcinoma of the larynx is, peculiarly, not amenable to treatment of any kind; arising, as it does, from tissue that is richly supplied by lymphatics, invasion of the adjacent tissue has occurred long before the diagnosis is established.

Intrinsic carcinoma remains confined for a long time within the body of the larynx and, due to the poor lymph drainage from this area, is slow to invade the surrounding structure and become extrinsic. It becomes extrinsic, usually, by direct invasion.

Most of the unsuccessful attempts at surgical cure of this disease can be attributed to delayed operation, which was instituted after the cancer had long since ceased to be intrinsic.

It is in intrinsic cancer of the larynx that surgery has its great opportunity. "Early diagnosis of carcinoma (intrinsic) of the larynx offers a lasting cure of 70 to 80 per cent."<sup>3</sup>

#### SURGICAL PROCEDURES FOR INTRINSIC CANCER

There are three main surgical procedures for intrinsic carcinoma of the larynx. Their indications and applications are well agreed upon and are as follows:

1. *Hemilaryngectomy*.—This is a dangerous procedure with a high mortality. This is due to disturbance in swallowing, as a result of injury to the arytenoid system and the consequent invasion of the trachea and bronchi by food and saliva, resulting, eventually, in death from pneumo-

nia. This operation has fallen into disrepute has no place in the consideration of surgical cure of intrinsic cancer. It is mentioned here because it was formerly used as the operation of choice in unilateral laryngeal involvement.

2. *Laryngofissure (Thyrotomy)*.—This is the operation of choice when the lesion is confined to one cord and does not extend beyond the anterior commissure, or to the posterior third of the cord. It is possible sometimes to effect a cure by this procedure when the anterior commissure is crossed and there is invasion of the anterior half of the other side. But, as I have found by sad experience, the danger of recurrence is great. It is true that one of my patients with bilateral involvement, so operated, is alive without recurrence after three years; but I feel that he can attribute his result to good luck rather than to good management.

3. *Total Laryngectomy*.—This is the operation of choice in intrinsic cancer of the larynx when the lesion involves the posterior third or has invaded the anterior commissure on the opposite side. This procedure offers the most favorable chance of permanent cure, provided the cancer is still intrinsic.

From the above it is noted that surgical procedure is narrowed down to laryngofissure and laryngectomy. The indications as given and agreed upon by Thomson, Jackson, Mackenty, Tucker, F. O. Lewis, and others, are so well established that it would seem as flying in the face of Providence to deviate from these precepts.

#### INCIDENCE OF CANCER OF LARYNX

It is, of course, impossible accurately to estimate the total number of individuals who develop cancer of the larynx in this or any other locality. Taking the figures quoted by Crile<sup>4</sup> that cancer of the larynx occurs from .1 to 1.9 per 100,000 population, there occur in Los Angeles 1.5 to twenty-eight cases per year. Mackenty<sup>5</sup> gives the incidence of malignancies of the larynx as two to three per cent of all malignancies. In his work on the subject he states: "According to Jurasz, malignancy of the larynx occurs in five per cent of all malignant tumors."

Mackenty<sup>6</sup> also states that malignant disease of the larynx occurs in five per cent of all malignant tumors.

In the United States, during 1928 the total death rate from cancer was 95.9 per 100,000 population. Taking these figures as a basis of computation, there can be expected to occur in Los Angeles<sup>7</sup> (with an estimated population of 1,500,000) during one year, 1438 deaths from cancer. The actual number of deaths from cancer given in the annual report of the Los Angeles department of health during the fiscal year 1928-1929 is 1453. Thus, according to figures given by Mackenty, there occurred in Los Angeles in one year twenty-nine to seventy-two cases of carcinoma of the larynx. Inaccuracies in diagnosis, as well as other causes of death in persons also having carcinoma of the larynx, can be expected materially to increase this number.

## EARLY TREATMENT IMPORTANT

Too few patients suffering with this disease are given a chance at surgical benefit. Generally surgical relief is sought when there is laryngeal obstruction sufficient to cause dyspnea or when there is imminent danger of suffocation, and then it is too late to effect a cure. In Los Angeles there is a liberal supply of well-trained and competent laryngologists, yet a search of the hospital records of ten years shows that there have been performed but ten laryngectomies, one hemilaryngectomy, and seven laryngofissure operations.

Dr. James Percy during this time has performed twelve operations in this region, all of which were for extensive involvement of extrinsic cancers, of the type usually considered inoperable.

Tucker<sup>8</sup> states: "Radium and x-ray therapy have no place in the treatment of cancer of the larynx, except in some cases as postoperative radiation, after laryngofissure or laryngectomy, to prevent glandular invasion; and in those cases which are not amenable to surgery because of location or extent of growth."

Quick and Johnson,<sup>9</sup> in an analysis of one hundred and fifty-six patients treated at the Cancer Memorial Hospital, conclude that, while radium therapy of primary operable intrinsic cancer of the larynx is permissible, the evidence, to date, does not warrant advocating it as the agent of choice.

Mackenty<sup>10</sup> states: "In my experience radium has been an utter failure for treatment in cases of squamous cell laryngeal cancer (*i. e.*, in 96 per cent of laryngeal cancers). Its false promise is luring thousands beyond the aid of surgical procedures."

Others can be quoted who express the same opinion. In my personal experience radium has been used only as a palliative measure. I have rarely been able to detect that radium treatment has produced any beneficial results.

## SIGNIFICANT SYMPTOMS

When persistent hoarseness, however slight, develops in a patient past the age of forty he should be kept under the constant observation of a competent laryngologist until a satisfactory explanation of the hoarseness has been determined. He should be a cancer suspect until proven otherwise.

Hoarseness may be present for a long time before a lesion can be seen. In one patient with hoarseness and throat discomfort, it was not until eighteen months later that a definite lesion could be determined. As soon as a definite lesion is located, it should be frequently observed, and as soon as it gives evidence of extension a biopsy should be done.

It is wrong to wait for such signs as dyspnea or cord fixation to develop before considering the possibility of malignancy. If the first biopsy is not diagnostic and the lesion is still extending, repeated biopsies should be made.

## DIAGNOSIS

The scope of this paper is not intended to include the differential diagnosis of carcinoma. It goes without saying that a patient with a laryngeal lesion will be investigated for the presence of tuberculosis and syphilis. However, patients infected with either or both of these diseases may also develop cancer.

If the lesion is not typical of tuberculosis or lues, the diagnosis must depend upon biopsy. On more than one occasion others, as well as myself, have considered that a certain laryngeal lesion was typical of malignancy, only to find by biopsy that it was a granuloma of tuberculosis.

Biopsies of course are frequently not diagnostic, as the piece removed does not contain a part of the true pathologic tissue. In such a case we can only use our best judgment and hope that we are right in our decision.

When it is possible to obtain a positive diagnosis of malignancy by biopsy, it gives a sense of mental security and freedom from responsibility in making plans for the future care of the patient. As soon as the diagnosis of malignancy is positively established, a suitable surgical program should be decided upon and carried out.

## SUMMARY

1. Treatment of intrinsic cancer of the larynx is purely surgical.
2. Surgery offers an excellent chance for cure.
3. Our only hope of progress in this disease lies in recognition of early symptoms.

500 South Lucas Street.

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## DISCUSSION

RULON S. TILLOTSON, M. D. (Woodland Clinic, Woodland).—Doctor Jesberg's paper gives us a concise review of the subject of carcinoma of the larynx. The statistics given relative to the incidence of carcinoma of the larynx are very interesting.

As has been stated, over 90 per cent of intrinsic cancers of the larynx are of the squamous cell variety and arise on or near the vocal cord. The explanation for this variety of tumor arising in this region and not in other parts of the glottis is clear, if we remember, the true vocal cord is covered with squamous epithelium, and as we pass to the floor of the ventricle above or to the subglottic region below, there is a change to the ciliated columnar type of cell.

Doctor Jesberg has stated that it is a mistake to wait for cord fixation before considering the possi-

bility of malignancy. Fixation of the cord at one time was considered one of the early signs of intrinsic cancer of the larynx; however, we now regard this finding as a borderline stage between intrinsic and extrinsic cancer of this organ.

I remember a patient seen by Dr. H. B. Graham and myself of an apparently intrinsic cancer of the larynx. The growth, an ulcerative lesion about the diameter of a dime, involved the anterior portion of the right vocal cord and adjacent region and extended well up to the anterior commissure. The vocal cord was fixed. A laryngectomy was done under local anesthesia by Doctor Graham and myself. The operative wound healed and the patient was breathing comfortably through the opening into the trachea on his discharge from the hospital. However, about two months following, he returned with a recurrence at the operation site and in the glands of the neck. Fixation of the cord in this patient might well have been interpreted as the beginning stage of an extrinsic cancer, although the operative indication was for the operation we had performed.

With advancement of intrinsic cancer of the larynx to the stage where there is fixation of the cord it is always well to x-ray the lungs if this has not been done. In a small percentage of cases we may find metastasis has already occurred.

Too much importance must not be attached to the age of the patient in differentiating cancer from other lesions of the larynx. Turner<sup>1</sup> has correctly said that no patient is too old to develop tuberculosis of the larynx or too young to be the subject of malignancy. I recently saw a case of tuberculosis of the larynx appearing for the first time in a man of sixty-four. An x-ray of the chest showed an old fibroid phthisis. The latter had become active again and was called attention to by the laryngeal lesion. Figi and New<sup>2</sup> have reported a case of cancer of the larynx occurring in a youth of fifteen on whom a laryngectomy was done to eradicate the growth. Thomson<sup>3</sup> reports Chiari as seeing a chordal cancer in a girl of sixteen.

Doctor Jesberg has referred to the difficulties sometimes present in the diagnosis of cancer of the larynx. In a recent article in the *Journal of Laryngology and Otology*, published in Edinburgh, Horne<sup>4</sup> states that cancer of the larynx is diagnosed more often than it exists, and that tuberculosis stands first in causing this error of diagnosis. He refers to patients reported by Semon, Thomson, and others, operated by these men for malignancy, which later proved to be tuberculosis. Such experiences in the work of these leaders in the specialty of laryngology emphasize the difficulties that may be present in the diagnosis of laryngeal lesions.

A biopsy should be done on any laryngeal growth where there is a suspicion of malignancy. In my own experience direct laryngoscopy, using Jackson's anterior commissure laryngoscope and sharp biting forceps, affords a satisfactory method of obtaining a biopsy specimen.

The work of Crawford<sup>5</sup> shows that the taking of a biopsy does not influence metastasis of the growth. His conclusions were based on the examination of a number of larynges removed by Dr. Fielding Lewis. In many of the cases the patient had refused laryngectomy for several months following a positive report from biopsy.

<sup>1</sup> Turner, A. Logan; Jackson and Coates. *The Nose, Throat and Ear and Their Diseases*. Textbook, 1929. Page 866.

<sup>2</sup> Figi, Frederick A., and New, Gordon B. *Carcinoma of the Larynx in the Young*. Arch. Otolaryng., 9, 386, April 1929.

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<sup>4</sup> Horne, Jobson. *Cancer of the Vocal Cords. Difficulties in Diagnosis and Fallacies of Statistics*. J. Laryng. and Otol., 44, 806, December 1929.

<sup>5</sup> Crawford, Baxter L., cited by Tucker, Gabriel. *Cancer of the Larynx*. Surg., Gynec., and Obst., 46, 306, March 1928.

About two years ago I listened to Sir St. Clair Thomson discuss his results with the laryngofissure operation in the treatment of intrinsic cancer of the larynx. I was impressed when he said that 50 per cent of his patients had been operated upon without a biopsy because it had been impossible to get a suitable piece for diagnosis. His statement suggested two things: first, that he sees many of his cases real early; and second, that with long clinical experience such as he has had, it would seem clinical manifestations outweigh the laboratory in making a diagnosis.

Doctor Jesberg did not refer to the intralaryngeal method of removal of small carcinomata of the vocal cords. I presume that he, like many of us, considers the uncertainty of complete removal the objection to this method. Lynch<sup>6</sup> has reported a group of patients in whom he has successfully removed perorally minute size carcinomatous growths of the vocal cords without recurrences. He uses suspension laryngoscopy with ether anesthesia. In view of Doctor Jesberg's extensive experience in direct laryngoscopy and bronchoscopy, it would be interesting to hear his opinion on the adequacy of the intralaryngeal method of removal of minute size carcinomata of the vocal cords.

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ORVILLE N. MELAND, M. D. (Los Angeles).—My discussion of this paper will be from the radiological standpoint. I think that Doctor Jesberg's presentation should be read by every general practitioner, for it will give him an idea as to the frequency of occurrence of laryngeal carcinoma as well as the necessity for prompt reference of patients with laryngeal symptoms to competent laryngologists for early, accurate diagnosis. In many instances this will require biopsy to prove or disprove clinical impressions. In our work we see a great number of patients in the terminal stages of this disease, and at least half of them give a history of prolonged local treatment before a clinical diagnosis of malignancy is made. Undoubtedly, in a few of them, earlier diagnosis might have resulted in complete eradication.

Now what is the best treatment of this condition? In the early intrinsic variety, where the disease is still localized, surgery is successful in the majority of patients. This means a laryngectomy, although some men advise chordotomy alone. The work of St. Clair Thomson and Mackenty shows what surgery has done and can accomplish in this field. In the extrinsic variety it is generally agreed that surgery cannot eradicate the growth completely. These patients come to the radiologist for relief.

The use of irradiation in laryngeal carcinoma is not so simple as one thinks. The reason for this is that most of these carcinomata are made up of stratified squamous cells and, as such, they are quite radio-resistant. Occasionally one sees a so-called lympho-carcinoma which is very sensitive to treatment, and it is in this class that the majority of radiologic recessions have taken place. In the radio-resistant type the dosage necessary for destruction is very high and requires an elaborate technique of cross fire by external irradiation, as well as local implants of gold radon seeds. Quick, Quimby, and Martin at the Memorial Hospital in New York say that it requires from two to eleven erythema doses to destroy a squamous cell radio-resistant carcinoma. To accomplish this a troublesome chondritis may result, if infection is present, since laryngeal cartilage is rather susceptible to injury.

The use of radium needles or gold filtered radon seeds within the larynx must be done only after very careful consideration of all factors involved. One must be assured of accuracy in diagnosis as far as the radio-sensitivity of the cells is concerned, as well as adequate drainage to avoid infection.

To sum up, I feel that, from a radiological viewpoint, these rules should be followed:

<sup>6</sup> Lynch, R. C. *Cancer of the Larynx*. South. M. J., 20, 119.

1. Prompt reference of patients with laryngeal symptoms to a competent laryngologist.

2. Biopsy on suspicious lesions to verify clinical impressions of carcinoma, with special attention paid to the degree of cell differentiation, for treatment purposes.

3. Surgical treatment of the early intrinsic variety, reserving irradiation to the extrinsic variety and to those intrinsic types where biopsy reveals that one is dealing with an undifferentiated tumor. New and Judd at the Mayo Clinic have shown that in these, dissemination is so rapid that even the most radical surgery is followed by prompt recurrence. Fortunately they are very radio-sensitive and should be treated by irradiation only.

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**DOCTOR JESBERG (Closing).**—Doctor Tillotson has asked my opinion regarding intratracheal removal of small neoplasms. My experience with this procedure is too small to form a basis for opinion. I have no doubt that small tumors can be removed by the oral route, but the procedure, I believe, is generally considered as inadequate. Certainly any more than a superficial involvement could not be treated by this method. Laryngofissure and removal of all soft tissue in the area of the lesion down to the cartilage is the much better plan.

#### LEAD INTOXICATION\*

By ERNEST H. FALCONER, M. D.  
San Francisco

*DISCUSSION by Fred H. Kruse, M. D., San Francisco; Lester Newman, M. D., San Francisco.*

IN the diagnosis of acute and chronic lead intoxication in industry, precise knowledge concerning the criteria necessary for making a positive diagnosis is too often lacking. Likewise, precise knowledge concerning modern methods of treatment is by no means the rule among physicians handling these cases.

In this communication the records of one hundred patients referred for a consultant diagnosis are analyzed in an attempt to bring out the relative importance of the necessary criteria for a positive diagnosis. Of this number, eighty-two were considered to be suffering from lead absorption and intoxication, and eighteen were considered negative, their symptoms being explained by other diagnoses, although in some instances these latter patients showed evidence of present or previous lead absorption.

#### EXPOSURE

A history of exposure to lead is naturally of the greatest importance, and as a rule the statement of the patient from industry reporting for examination is sufficiently convincing as to this point. Not infrequently, however, the employers report that the claimant has not been exposed to contact with lead; then the situation calls for special investigation. One of the patients reported in this series was stated by his employer to have had no possible exposure to lead, as he was spraying automobiles with a duco enamel which contained no lead. The patient made the situation clear when he stated that part of his work was

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to sandpaper the paint off old automobiles, preparing them for the duco spraying. Another diagnosis of the series was contested by his employer on the ground that the patient handled no lead whatever, although he was employed in a battery manufacturing plant. The statement was found correct as to the handling of lead, but inspection of the plant disclosed that the floor of the room in which this young man worked was covered with dust containing a high percentage of lead. The laity and many medical men hold the idea that the most prolific source of "leading" is from improper attention to personal cleanliness while working about lead—eating with dirty hands, chewing tobacco, carrying lead on the clothing. As a matter of fact the inhalation of lead dust is by far the most prolific channel of lead absorption and the gastro-intestinal route is the least important.

#### SYMPTOMS

Analysis of 100 cases referred for chronic lead intoxication. Of this number, eighty-two were diagnosed as suffering from lead poisoning and eighteen were considered negative, their symptoms being explained by other diagnoses.

TABLE 1.—*Symptoms Present Indicated by Percentage*

Nausea and vomiting.....	35
Abdominal cramps.....	80
Loss of appetite.....	50
Constipation.....	40
Bad taste in mouth.....	42
Weakness.....	52
Weakness of extremities, wrist and forearm.....	8
Lower extremities.....	16
Pain in lower extremities.....	9
Muscle cramps.....	7
Coarse muscle tremors.....	1

Abdominal cramps present in 80 per cent of the patients diagnosed as suffering from lead intoxication constitute, with the history of exposure, relatively our most important data. If other obvious causes for the abdominal cramps are absent, we know we are dealing with what is known as a "toxic episode" in chronic lead absorption. When cramps are present we have an acute manifestation of lead intoxication. As a symptom, abdominal cramps rank first in importance. Nausea and vomiting indicate also a "toxic episode" and occur in acute intoxication. Loss of appetite belongs both to the acute or the more chronic state of absorption and intoxication. Constipation was present in less than half the series, probably because patients take cathartics early as soon as the first symptoms are manifest and for this reason they do not complain of and if questioned they probably deny constipation. Bad taste in mouth and weakness are important minor symptoms. Weakness of either upper or lower extremities if present constitute a major symptom of considerable importance.

#### CLINICAL AND LABORATORY DATA

TABLE 2.—*Laboratory and Clinical Findings in Percentage*

Lead line on gums.....	54
Secondary anemia.....	56
Stippled cells or basophilic degeneration.....	70
Urinary findings of albumin, casts, white blood cells and red blood cells.....	60
Peripheral neuritis.....	6
Coarse muscle tremors.....	2

*Lead Line on Gums.*—It is necessary to distinguish between the bluish cyanotic line present in pyorrhea and poor oral hygiene, and the stippled line indicating lead deposit. A hand lens is necessary for this purpose, and often slipping a piece of white paper behind the margin of the gum is of help. The lead line is most frequently present at the site of pyorrhea pockets; if the teeth are well cared for, it may not be present when other signs of active absorption are found. It may be present as the result of a previous absorption and does not necessarily indicate that absorption is taking place at the time the lead line is discovered. May R. Mayers<sup>1</sup> of the Bureau of Industrial Hygiene, New York, in examination of 381 lead workers for lead line, found thirty-one instances, or 8.1 per cent. Of this number, ten gave no other sign of lead absorption, no lead anemia, no lead in the urine. Lead had been deposited at some previous time when absorption was taking place. There were 201 men in this series who showed laboratory evidence of lead absorption without a lead line. Teleky<sup>2</sup> has reported a lead line in a worker eleven months after being away from all contact with lead.

*Secondary Anemia.*—Secondary anemia was present in 56 per cent of the series. Pallor of the skin and lips is one of the early, rather striking signs, but it is not an index of the anemia present, as the total reduction in the number of cells and hemoglobin is usually slight. The pallor is considered by Koelsch<sup>3</sup> to be due to the action of lead on the capillaries of the skin. The secondary anemia is not particularly characteristic in lead intoxication. It is usually mild, stippling of the red cells being the most distinctive feature.

May R. Mayers,<sup>4</sup> in her blood studies in lead intoxication, states that one must look at the blood picture as a whole, anisocytosis, poikilocytosis, polychromatophilia, stippling, a relative lymphocytosis, and a slight increase in monocytes. The stippling or basophilic degeneration is one of the most important early signs. It is frequently present before any very definite evidence of anemia is present. One must remember that stippled cells may appear in small numbers in normal blood. It is found in malaria, leukemia, pernicious anemia, cirrhosis of the liver, and in the secondary anemia of malignancy. It is important to know that stippled cells may be intense on one day and practically absent a few days later. Meyer and Speroni<sup>5</sup> call attention to this from their daily observations of stippling during plumbism. It is important to make more than one observation and to prepare and stain the preparations with meticulous care.

*Urinary Findings.*—The urinary findings of renal irritation are important in our experience. In this series they were present in 60 per cent of the cases. There is nothing characteristic about these findings and they were only of value in conjunction with other symptoms and signs. The finding of lead in the urine may or may not be a sign of active lead absorption. Oliver<sup>6</sup> has

found it in the urine eleven years after removal of exposure to lead. It is a valuable minor finding in conjunction with other findings, but the work of R. A. Kehoe and F. Thaman<sup>7</sup> in 1929 indicates that many so-called normal individuals are apparently exposed to enough lead absorption to show traces of lead in the urine. Their experiments on twenty-five medical students showed that a rather high percentage gave traces of lead both in the urine and in the stool.

*Peripheral Neuritis.*—The so-called "peripheral neuritis" of lead intoxication is one of the major physical signs. The upper extremities are usually involved, especially the well-known "wrist drop." Alcoholic neuritis, arsenic and cervical rib should be carefully excluded. Such a neuritis, accompanied by fever, is probably not due to lead. Coarse muscle tremors are rather unusual, the fine tremor with, at times, even fibrillary twitchings being more common.

#### COMPLICATIONS

TABLE 3.—*Listing of Complications*

Bronchopneumonia, eosinophilia, lead .....	2
Endocarditis (chronic), question as to aggravation .....	2
Myocarditis (chronic), question as to aggravation .....	4
Hypothyroidism .....	1
Optic neuritis .....	2
Enlarged liver and jaundice .....	1
Diabetes .....	2
Tabes and cerebrospinal lues .....	2
Syphilis other than central nervous system .....	2
Appendix removed .....	1
Cystoscopy .....	1

The bronchopneumonia, eosinophilia, and lead intoxication observed in two cases is extremely interesting. The eosinophilia is probably connected with the bronchopneumonia, having no causative relationship to lead intoxication.

In industry, especially in connection with the Workmen's Compensation Laws, the question of the influence of lead intoxication on chronic residual pathology, especially as to the activation or progression of such pathology, often presents itself. This is particularly true with reference to chronic endocarditis and myocarditis. Lead is a distinctly toxic agent to cellular protoplasm, and it probably does cause some slight acceleration of a chronic myocarditis. Recent studies and investigation appear to indicate that less heart muscle damage, especially permanent danger, occurs than is generally supposed. The older teaching stressed the damage caused by lead to arteries, myocardium, and renal tissue. The endocardium probably suffers little from a moderately severe lead intoxication.

Complications due to the presence of tabes or cerebrospinal lues makes a difficult situation to manage, especially if abdominal pain is present. In this connection it is helpful to know that lead colic, even untreated, seldom lasts longer than five or six days. Under milk and a high calcium diet, with calcium lactate by mouth or calcium chlorid intravenously, the pains clear up rapidly. Where they persist week after week one is suspicious that they are not due to lead. When one encounters abdominal pain persisting, it is important to make thorough gastro-intestinal studies,

including gall-bladder visualization, and to perform a spinal puncture, especially if the blood Wassermann is negative.

**FINAL DIAGNOSES ON CASES REFERRED AS LEAD POISONING, BUT NEGATIVE FOR EVIDENCES OF LEAD INTOXICATION**

TABLE 4.—*The Negative Lead Cases Showed Following Diagnoses*

Cirrhosis of liver.....	1
Hypernephroma (possibly lead also).....	1
Kidney stone.....	2
Acute chronic cholecystitis (one case operated).....	4
Duodenal ulcer.....	1
Acute respiratory infection (influenza type).....	3
Alcoholic neuritis.....	1
Inhalation of illuminating gas.....	1
Pyelitis.....	1
Acute plastic pleurisy (right side, and diaphragmatic involvement).....	1
Diabetes and hypertension.....	1
Arthritis of spine, nerve root pains, diabetes.....	1
Syphilis treated with bismuth.....	1
Epilepsy.....	1

*Cirrhosis of the Liver.*—In this case the patient had been having gastric hemorrhages. The claim was that the cirrhosis was due to liver damage from lead intoxication. The hemorrhages had caused a secondary anemia and there was some stippling and polychromatophilia (both are found in cirrhosis of liver). There was no lead line, no renal irritation, no history of toxic episodes, no evidence of palsy or nervous system involvement. The data obtainable was against lead intoxication, and cirrhosis of the liver explained all of the patient's symptoms and complaints. There was no evidence that lead had played an etiological rôle in the cirrhosis.

*Hypernephroma.*—This patient and one other patient with a carcinoma of the colon (sigmoid) had a positive history of lead exposure and some evidence of previous lead absorption. The presenting symptoms were abdominal cramps and pain, secondary anemia, weakness, and constipation. At autopsy no pathology was found that could be attributable to lead. Neoplasms were found to which all symptoms could be attributed.

*Acute and Chronic Cholecystitis.*—Cholelithiasis should be differentiated, as many patients operated upon showed gall-stones. Diagnosis is difficult to decide, especially if there is a history of exposure. Abdominal pain and cramps with gastro-intestinal "upsets," occasionally nausea and vomiting, are the chief complaints. Abdominal cramps frequently usher in a toxic episode in lead poisoning, and a lead line and secondary anemia may not be present early in these toxic episodes. The urine is usually fairly negative in cholecystitis with the exception of traces of bile. Stippling is usually absent in gall-bladder diseases. The patient operated upon was a painter who, although not in contact with lead for four or five years, showed evidences of former absorption. After kali iodidi, we found stippled cells in the blood smears, also traces of lead in the urine. He was seen in an attack in the hospital, and while his pain was distinctly over the region of the colon and all in the lower abdomen, the upper right quadrant was resistant and spastic; there was marked tenderness over the gall bladder. A blood count showed an increase of white cells

with 83 per cent polymorphonuclear type. An x-ray revealed the presence of stones. At operation the gall bladder was found full of small stones. This patient had been in a hospital on a previous occasion for three weeks under observation and study, and was dismissed with a diagnosis of chronic lead poisoning. The important point in connection with this history is that abdominal cramps due to "lead colic" should not keep recurring under treatment, unless "stored lead" is being liberated too rapidly. In that case evidence should be found in the blood and urine.

*Acute Respiratory Infection.*—It is interesting to note that an acute respiratory infection of the influenza type will often liberate stored lead in individuals exposed to absorption of lead through the fever and heightened metabolism which disturb the acid-base equilibrium. Symptoms of lead intoxication will follow defervescence of the fever, and lead colic may appear during the course of the fever. On the other hand, in some cases of acute respiratory infection we have pain and tenderness over the colon due to the infection, and individuals exposed to lead always attribute these symptoms to their exposure. These patients should be examined carefully and diagnosis not be decided after a ten-minute survey of the case.

*Lues Treated With Bismuth.*—Another interesting patient in this series was a luetic under treatment with bismuth. He was having headaches and indefinite abdominal pain and discomfort. As he worked in a battery factory, he attributed his symptoms to lead. He had also noted soreness of the gums and, on examination of them with a mirror, noted a "blue line" on the gum margins. Examination showed a "blue line" on the gums, stippled red cells, no renal irritation, no lead in the urine, a positive Wassermann. Bismuth produces a line on the gums, appearing much the same as a lead line. It also produces stippling of the red cells.

*Epilepsy.*—The one patient in the series with epilepsy gave a positive history of exposure to lead; and stippling of the red cells, with a mild secondary anemia, was found. After protracted treatment and the disappearance of all signs of lead absorption, the "attacks" grew more frequent, entirely disabling the patient. The original idea that his convulsive attacks were due to a lead encephalopathy was abandoned.

TABLE 5.—*Blood Pressure and Arteriosclerosis*

Low blood pressure (110 systolic or under).....	5
Normal blood pressure (110 to 130 systolic).....	45
Hypertension mild (130 to 150 systolic).....	15
Hypertension moderate (150 to 180 systolic).....	5
Arteriosclerosis (definite so that artery could be rolled under finger).....	8

TABLE 6.—*Source of Exposure*

Battery works .....	30
Paint burning and smelter work.....	25
Spraying fixtures.....	1
Painter or paint manufacturing plant.....	18
Chemical manufacturing plant.....	4
Wire works .....	2

This series showed only eight patients with well-marked evidence of arteriosclerosis. The blood pressure estimations show only twenty pa-

tients with abnormal systolic pressures, a per cent of twenty-four. Undoubtedly the explanation of the low per cent of abnormal blood pressure readings is the young age incidence. Nearly all of the battery workers were youths.

TABLE 7.—Duration of Disability and Length of Treatment

One month.....	3
Two months.....	9
Three to four months.....	16
Five to six months.....	11
Seven to eight months.....	8
One year or more.....	6

The statistics shown here on duration of disability and length of treatment may seem to indicate undue caution in treatment. Allowance has to be made for the fact that under the Workmen's Compensation Act many of these people tend to protract their symptoms. Wholly aside from this fact, however, we believe that each patient with lead intoxication should be "delead," as far as it is possible to do so, before returning him to work. A man with lead stored in his osseous system is a big potential risk to industry. An attack of influenza, an alcoholic debauch, dietary indiscretions, may shift his acid-base equilibrium and release stored lead into the peripheral blood stream, thus precipitating toxic symptoms and signs. Individual susceptibility to lead, like susceptibility to other poisons, varies markedly and no standardized "rules" for treatment will reduce the length of disability because certain individuals will always require longer and more careful treatment before they are physically able to return to work. It is impossible to "delead" an individual entirely, and after a certain period of treatment for lead elimination it is better to give treatment directed toward storage in the osseous system.

#### TREATMENT

The treatment employed in the majority of these reported cases is adopted from the excellent monograph on "Lead Poisoning," Aub, Fairhall, Minot, and Reznikoff.<sup>8</sup> They have devised a new treatment, based on their experimental observations, that an increased calcium intake or positive calcium balance causes lead to be stored in the osseous system in the form of insoluble lead salts. A low calcium intake—what they term a negative calcium balance—favors elimination of lead from the osseous system.

When acute symptoms are present, as colic, the diet should contain vegetables and fruit (both of which contain calcium), and about one quart of milk daily, with two grams of calcium lactate by mouth. Pain subsides very rapidly. In a very severe colic one may give calcium chloride intravenously, after which the colic is reported to disappear rapidly. When the acute symptoms have subsided, a negative calcium balance is maintained by a low calcium diet and changing the hydrogen ion concentration of the blood. The low calcium diet contains no fruit, milk, vegetables, or eggs. Acids given with this diet change the hydrogen ion concentration so as to favor elimination of lead from the osseous system. Ammonium chlorid

is better than acids, as it is less disagreeable to take. It probably breaks up into hydrochloric acid and urea in the body. One gram should be given about eight to ten times per day. Soda bicarbonate twenty to forty grams per day, can be used with a general diet. Most industrial patients (ambulatory) will not remain on a low calcium diet. Potassium iodide is, perhaps, easier to use than sodium bicarbonate employed in such large doses. Cathartics may be used during the acute stage, but after the acute symptoms subside, it is probably better to use less irritating methods of securing bowel movements as, for example, agar-agar and mineral oils.

#### COMMENT

The records of one hundred patients referred for diagnosis and in certain instances for treatment of suspected lead intoxication, are analyzed in an attempt to evaluate the symptoms, physical signs, and laboratory data present in the study of this series. The aim has been to bring out the fact there is a difference between lead absorption and lead intoxication; also that certain symptoms and findings are of sufficient relative importance as to be classed as major findings, others of lesser importance to be classed as minor findings. To make a positive diagnosis, one should have two or three major findings and one or two minor findings. It is not justifiable, as a rule, to make a positive diagnosis on one major finding with no minor symptoms or signs, or on two or three minor findings with no major symptom or sign. It seems justifiable to consider as major symptoms abdominal cramps, constipation, weakness of extremities, pain in lower extremities, and probably nausea and vomiting; and as minor symptoms anorexia, bad taste in mouth, muscle tremor, and weakness.

Major clinical findings: Lead line, stippling of the red cells and secondary anemia, muscle palsy, "wrist drop" and urinary findings of albumin, casts, red and white blood cells, cylindriforms.

Minor clinical findings: Lead in urine and stool; coarse and fine muscle tremors.

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## DISCUSSION

FRED H. KRUSE, M. D. (384 Post Street, San Francisco).—It is a most estimable procedure to group and analyze a series of cases that have passed through one's hands in a period of years, and to scrutinize critically the evidence that has been accepted for a diagnosis. I do not know of any malady that requires more careful study in each particular case than so-called "lead poisoning." Generally the acute episodes are clear-cut enough in their manifestations to afford little trouble, but the question of recurrences and exacerbations of former poisoning, the chronic invalidism which many of these patients later assume, and the problem of what may or may not constitute residual pathology due to lead may certainly tax the judgment and discretion of the examiner to the limit.

It is therefore with great personal interest that I have read Doctor Falconer's comprehensive and excellent presentation of the subject of lead intoxication from a critical survey of cases with which he had labored and with which he was familiar on account of opportunities for sufficient observation. Many of the cases reported were seen by me also at that time.

I am in especial agreement with the conclusion that a certain group of symptoms and signs of varying importance must be present before concluding that the disability claimed is due to lead. Stippled red cells, while important, are not alone diagnostic. A lead line on the gums too frequently is shown to be only the purplish discoloration of gingivitis and pyorrhea. While the presence of lead in the urine may be significant, we know that lead may be frequently found in the urine of normal individuals, but the absence of a positive lead urinary test in a patient claiming active poisoning is a most important negative finding.

There are two groups of chronic invalidism who, having once suffered from lead intoxication, or who have been exposed thereto, present themselves as disabilities from chronic lead poisoning, in which it is most difficult to determine the diagnosis as between chronic lead poisoning and other pathology. These are: (a) Patients with arthritis and neuritis, with referred abdominal and extremity pain, often showing some joint fixation and muscle wasting and weakness, erroneously diagnosed as lead neuritis; and (b) patients with low-grade intestinal disease in which the anorexia, constipation or diarrhea, coated tongue, and abdominal pains from which they suffer are claimed to be due to lead.

In the first group a careful neurological survey will usually show no actual nerve palsies, and prove the muscle impairment and loss of function to be due to the fixation, disuse atrophy, and other manifestations of the arthritis. The finding of much focal infection and a careful history of the onset and course, with the absence of the proper array of Doctor Falconer's major and minor signs and symptoms, will afford a basis for a fair decision.

In the second group I have frequently found gall-bladder disease, peptic ulcer, chronic pancreatitis, appendicitis, and spastic or irritable colon, or even colitis as the cause of the abdominal symptoms.

It is therefore apparent that only a careful study of the gastro-intestinal tract and the presentation of a definite cause for the symptoms complained of will settle this issue. Frequently I find that these patients are suffering from a colitis caused by the laxatives they were given with their first treatment and which they have since continued. Gastro-intestinal symptoms from lead should not be indefinitely prolonged, although, of course, exacerbations may occur in patients who have been leaded, with the shifting, for various reasons, of the stored lead in the bones. I think that a slow deleading process should be carried out as far as possible for a period after the acute episode.

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LESTER NEWMAN, M. D. (State Building, San Francisco).—The careful analysis of this series of cases

of lead intoxication which Doctor Falconer has presented is gratifying. A tremendous number of errors have been made regarding lead intoxication owing to the diversity of conditions which produce somewhat similar symptomatology.

That industry and carriers of industrial and compensation insurance are vitally interested in proper diagnosis, treatment and preventive methods, and in reduction of these lead episodes, is of fundamental economic importance.

Determination of the facts surrounding the incidence of any reported case of lead poisoning and the utmost accuracy of detail of the patient's employment should be on record. The story told by an individual who is financially interested in a positive diagnosis may, without guile on his part, incline toward a positive diagnosis.

Therefore the doctor must often investigate the actual conditions of the individual's work through personal contact before drawing his final conclusions. As Doctor Falconer has suggested, the matter of diagnosis is not one for a ten-minute survey. It is one for involved study. The process of manufacture, the safety methods employed at the plant, the hygienic measures undertaken by the employees, and other allied factors must be taken into full consideration before a conclusion is reached.

Through the investigation of industrial plants and the tabulation of related cases of lead intoxication it has been my observation that poisoning through inhalation is of paramount value. Much stress has been placed upon the absorption of lead through the skin and many safety measures have been initiated to protect against such absorption without due consideration of the inhalation avenue of intoxication. Fortunately at the present time more safety work has been pointed toward the elimination of the latter source of poisoning.

The diagnoses of lead have not been differentiated from constitutional diseases outside the realm of industrial poisoning, which have similar symptoms, with proper care. The placing of too great stress upon abdominal cramps and the possible lead line has been a source of many mistaken diagnoses and has placed upon the employer an unwarranted burden. It is necessary to allocate with absolute accuracy the etiology of a syndrome which has the appearance of a lead intoxication, and as far as is possible the occasion or period of time to which the manifestation of lead poisoning may be charged. The individual may have been working for two distinct organizations and been leaded under both employments, and it is manifestly unfair to burden one employer with an economic debit which is not his own. The diagnostician, therefore, must go beyond the mere compendium of symptoms applying to a lead intoxication and must then determine whether the disability manifested is due to a prior lead intoxication brought to a disabling condition by some intercurrent infection or other agency, or whether it is due to a recent intoxication under the particular employer who is covering the man at the time of examination. While any of the usual findings, such as a lead line, stippled red cells, positive urinary findings, a peripheral neuritis and an abdominal colic are quite suggestive, nevertheless they are not conclusive until they are grouped and analyzed in connection with the other circumstances of employment.

I believe it is essential in the matter of treatment that after the acute condition is taken care of, an effort be made to delead over the extended period of time. This is an obligation of the physician toward the patient and our industrial economic system.

The other big angle of attack in the matter of lead poisoning is through prevention. In this connection I may state that suitable effective work is being done toward the elimination of those conditions which promote the absorption of lead by the Safety Engineering Department of the Industrial Accident Commission and the compensation insurance carriers.

## ENDOCERVICITIS—ITS ETIOLOGY, PATHOLOGY, AND TREATMENT\*

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DISCUSSION by W. M. Edwards, M. D., Portola; C. F. Fluhmann, M. D., San Francisco.

**E**NDOCERVICITIS may be defined as an infection originating in the racemose glands of the endocervix, or communicated to the cervix by infections from Skene's ducts of the urethra. By reason of such extension into the racemose gland structure, there are produced definite morphologic changes in the body of the cervix, and also irregularities in the contour of the cervical canal. This extension of inflammation along the contiguous columnar cells lining the walls of the glands and their deep ramifications, produces characteristic lobulations within the body of the cervix. Such are called Naboth cysts, after the distinguished Saxon anatomist, Martin Naboth (1675-1721).

### ANATOMY AND PHYSIOLOGY

In order to better understand the anatomy and physiology, a brief anatomical and histological review is presented.

The cervix is embryologically derived from the second portion of Müller's duct, while the uterus is derived from the first part. The union of the uterus and cervix is completed at the internal canal. The cervix is centrally pierced with a cylindrically shaped canal, communicating above with the uterus and below, emptying into the vagina. Beginning at about the middle of the canal and extending to the internal os, there is found a plication of the endocervical mucous membrane known as the arbor vitae of plicae palmatae.

The endocervix is coated with a layer of squamous epithelial cells, and is ciliated, especially in its upper part. There is no underlying submucosa in either the cervix or uterus. The mucous lining of the cervix is pierced down through its depth by its racemose glands, and the muscularis of the cervix is likewise penetrated at variable depths by the glands. It has been estimated that, according to size of the cervix, there are from sixty to eighty thousand of these racemose glands covering the mucous surface of the endocervix<sup>1</sup> (Strumdorf). In addition to this great number of glands there are a great number of minute depressions, either round or oval-shaped, appearing in the surface of the cervical mucosa. They are sometimes but one-tenth of a millimeter in diameter, and in their centers appear minute particles of sago-like substance. Their function is evidently simply that of added secretory bodies, designed possibly to give greater pliability to the cervix when in labor. Strumdorf<sup>2</sup> holds that in two per cent of all cases there is a slight extension upward into the lower part of the uterus of the cervical racemose glands, showing that

not in all cases is there a hard-and-fast line of cellular limitation.

In about the central part of the canal, which is the narrowest part, there is a beginning change in the type of epithelium from above downward. At the upper part, especially embracing the arbor vitae, the cells are of the high columnar type, fancifully called "picket" type by some. From the middle to the outer portio, this declines gradually into the smoother and possibly harder type of flat squamous epithelium and converges with the epithelium of the vagina.

At this mid-line junction, where the canal is narrowest, there appears something like a modification of the epithelium, which led some of the former day pathologists to consider that cancer was likely to occur at sections where different epithelial types converge from one into another<sup>3</sup> (Hertzler). There is possibly some truth in this statement as applied to cancer of the cervix. In over fourteen thousand persons in the United States, dying of cancer of the female genital organs<sup>4</sup> (Soper), the preponderating majority are within the cervix.

Again referring to the histologic anatomy of the cervix, we must consider the lymphatics which play so important a part in ascending infections of the uterus and adnexa. The lymphatic structure of the endocervix begins in the mucosa, the lymph vessels communicating with the lymph bodies situated in the cervical muscularis. From thence the lymphatics pass upward to the uterus, forming a capillary network and drain into the lymphatic channels which pass along the uterine and ovarian vessels on the top and underside of the broad ligaments, to be carried further on into the lymph stream, emptying into the lumbar glands. We should keep in mind a clear definition of what a racemose gland structure means, with its tubular-shaped outlet and its ramifications or branches spreading out of sight under the mucosa. In the cervix, the racemose glands are called muciparous and here they secrete an alkaline fluid. In the mouth racemose glands secrete ptyalin. In the breast, milk.

The tens of thousands of racemose glands of the cervix, with their superficial and deep lymphatics connecting with the entire uterine, ligamentary, tubal and ovarian structures, will interest us when we speak of the pathology of these parts.

### ETIOLOGY

*Etiology in Infancy.*—Considering the etiology of endocervicitis, we can cite a number of exciting causes. Beginning with infancy, evidently many cases have their origin when the infant has a diarrhea and has its vulva constantly plastered with foul fecal matter. Bacteria at times find entrance into the vulval orifice and thereby set up an inflammation of more or less chronicity. Infectious diseases of childhood with localizations are found in the vulva.

I believe one source frequently overlooked as a factor, is where children receive their baths in the same tub or in the same water with the other children of the household. Personally, I know

\* Read at the annual meeting of the Nevada State Medical Association, Elko, Nevada, September 27 to 28, 1929.

of an institution where years ago this was the practice. A large number of cases of gonorrhea appeared in the girls of this institution, among girls from one to fifteen years old. The origin of the epidemic was traced to an older girl who had been infected with gonorrhea. It was the custom there to bathe the little girls in tubs with two and three children in the same tub and same water. Following investigation as to the origin, the obsolete institutional bathtubs were taken out and showers substituted.

*Etiology During School Age.*—Advancing to the school age, unsanitary toilets of the circular type have been pronounced as disease carriers by reason of some girl carrying a chronic vaginal discharge and contaminating the seat. Much attention has of late been directed to the danger of infection of innocent girls by being compelled to use this type of seat in school or elsewhere; also contamination in households where infection of this nature exists. Indeed so serious is this a cause of endocervicitis that Kelly in his last work in his chapter on leukorrhea, page 222, quotes Flora Pollack, a worker in the gynecologic clinic in the Johns Hopkins Hospital, who says that upward of one thousand girls are infected yearly in Baltimore. If this is true in one city, how many infections of girls must there be in the United States?

*Etiology in Adult Life.*—Another and frequent cause comes from the lacerations of the cervix in childbirth. Assuming that there has been no specific infection in the case, a torn cervix cannot be considered in any other light than as a diseased cervix. With the possibility of minute bits of fecal matter gaining entrance to the vagina, all manner of irritants, such as *B. coli*, staphylococci, and other bacteria, can easily reach a torn and inflamed cervix, thus producing leukorrhea, the most common disease known to womanhood. The condition is kept active by constant douching with irritating chemicals. Frequently the dirty douche pipe which has been used to produce an enema, with only superficial cleansing, is inserted into the vagina to contact with a torn and excoriated cervix.

Still another contributing cause to endocervicitis is sounding the uterus with a probe when the woman is subjected to table examination. This is a pernicious practice, and unless operative measures are immediately done, an infection of endocervix is already acquired by the patient.

There might be other causes, but we will now consider the greatest of all exciting causes producing endocervical infection. This potent cause is as old as the human race. It evidently had its origin in the days when the human tribe became gregarious for mutual protection.

In spite of any communal laws to protect virginity, there was always some Lothario who, with the burning sex lust setting his blood afire, could find copartnership with some woman as sexually ardent as himself. It always has been so and always will be. There never was any law or decree, human or divine, that could work out to

prevent some men and women from breaking the seventh commandment. Our modern social life, with our increased social liberty for both sexes, encourages sex commingling, and with such sex commingling come sexual diseases. Take, for example, gonorrhea, said by some to be the affliction of the Israelites mentioned in Leviticus, fifteenth chapter. Gonorrhea is present in every civilized community the world over. If it were possible to get at facts, I believe it would be found that there are more active cases of gonorrhea in every community than there are of tuberculosis, arteriosclerosis, diabetes, or heart disease.

#### PATHOLOGY

Assuming that we have enumerated the majority of exciting causes, let us consider, briefly, the pathology which follows when the thousands of endocervical glands become infected. As was said before, the racemose glands penetrate down through the epithelium of the cervix, through the mucosa, and into the muscularis of the cervix. These glands then communicate with the deeper lymphatics, and as this lymphatic network extends upward it bathes the most delicate fasciculi of muscle sheaths in uterus, ligaments, and tubes. It is from the cervical endometrium, and rarely from the uterine endometrium, that infections of the female reproductive organs originate. Research work has put the taboo on the term "endometritis" where such condition is supposed to exist *per se*. Abundant clinical research has most conclusively shown that, in spite of infections in the cervix or tubes, the endometrium is not a germ-harboring tissue that fosters the growth of bacteria. Certainly it can be temporarily contaminated by drainage from a purulent tube, but the anatomic construction of the endometrium shows it to be supplied with shallow placed tubular glands, not of the cervical racemose type.

With the anatomic structure of the cervix understood, likewise the manner whereby infections of the parts are induced, the pathology of the infected structure may be briefly considered.

The first change in tissue when traumatized or infected is the increase of blood cells to the part. Phagocytosis takes place in an effort to engulf and destroy invading bacteria. If the type of bacteria is mild and the insult not repeated, tissue destruction is very slight and function is not impaired. But if the bacteria are virulent, as in the case of gonococci, tissue destruction and loss of function take place to a considerable extent. For instance, witness the one-child mother, who fails to conceive when the os uteri is a teeming colony of gonococci and the fallopian tubes partly or completely destroyed. As a result of impairment to the tubes and with the plug of infected mucus in the cervix, spermatoza are impeded in their upward migration or destroyed. It is this structural change of tissue with partial or total loss of function that we will now briefly consider.

Beginning with the cervix, the openings of many of the racemose glands become plugged up by reason of bacterial irritation. Continued irri-

tation will produce an excoriation of surface epithelium, and in nature's effort to rebuild, if the underlying cell protoplasm of the cell substance is destroyed, nature will then form new tissue to act as a bridge, reaching from one healthy edge of tissue to the other. This new tissue is scar tissue. Scar tissue will always contract and thus the openings of the racemose gland become sealed. The result is that the gland is not destroyed, but continues to secrete, distending every one of its ramifications, and producing the lobulation seen and felt in the body of the cervix. These lobulations are called Nabothian cysts.

The size of the infected cervix will depend upon the number and size of these cysts. Sometimes we see a cervix, especially in the torn cases, that will fill the upper fornices of the vagina. But not all of these thousands of racemose glands become plugged. Those remaining open will, by the pressure exerted upon them by their neighboring cysts, secrete more excessively. Also as a result of the bacteria lodged in their lumen, there is naturally produced a hypersecretion. This excess secretion becomes permeated throughout with more or less virulent cultures of bacteria and, as Curtis<sup>5</sup> has proved, one-third of all patients having purulent leukorrhea have virulent streptococci. Leukorrhea is then the danger signal that should warn obstetricians and surgeons that frequent examinations in childbirth, in the presence of traumatized tissue, will partly help account for the twenty-five thousand deaths occurring yearly in the United States in childbed. The abdominal surgeon should be aware that there is ever present the possibility, when operating upon the uterus or tubes, of encountering a dormant colony of virulent streptococci, which, when liberated by the knife, will be released into the patient's circulation with deadly results. Ochsner and Percy<sup>6</sup> state that in hysterectomy the surgeon should be careful, in sponging the surface of the uterine stump, not to carry any infectious material in the mucous membrane lining of the stump to the other portions of the abdominal cavity. This sensible surgical suggestion came about as the result of experience, possibly dearly acquired. My own belief is that prior to every supravaginal hysterectomy the canal should be previously sterilized with the actual cautery.

Following the mechanical blockade of the cervix by reason of distended cysts, stasis is produced all along the line of contiguous tissue. The blood vessels and lymph currents become tortuous and impeded in their function. The result is about the same as though you tied a ligature around your leg or arm. What would follow? Impeded circulation, serous exudate into the part and, eventually, more or less destruction of tissue, with loss of function. When chronic stasis is acquired, naturally there follows hypertrophy of tissue with more or less fibrosis. This accounts for the boggy womb felt in doing a vaginal examination. It also accounts for much of the backache in women when their posterior uterine ligaments are congested and a localized

neuritis exists. Circulatory stasis of tubes and ovaries will often produce congestions in those structures with a low grade type of pelvic tic dououreux frequently associated with dyspareunia. The old term "pelvic cellulitis" still holds good. A boggy, hypertrophied uterus, likewise ligaments and tubes, is a pathologic condition. One of the serious abnormal conditions produced is the limitation of the uterine contractions. By means of constant rhythmic contractions, always present in the uterus, the normal nutritive functions of the uterus are carried on. To quote Strumdorf:<sup>7</sup> "The specific functions in menstruation and gestation demand a wide range in the control of its blood supply, and, like the heart, the uterus automatically responds to its fluctuating circulatory necessities by rhythmic contraction and dilatation, not only during pregnancy, but throughout its functional existence."

This hypertrophy produces muscle degeneration of the uterus, in other words, a fibrosis. This important etiologic fact will undoubtedly account for the frequency of miscarriages in women with this condition, where syphilis or gonorrhea does not exist, and quite possibly, placental adhesions also. The normal soft bed of the uterine mucosa is transformed into a tough fibrous membrane, so that when the chorionic villi endeavor to implant themselves down into the uterine substructures, they encounter a layer of what might be called hard pan. Thus deprived of nutrition, miscarriage, or placental adhesions, take place by reason of nonnutrition of the mucosal bed.

When bacteria are carried upward in the lymph stream, an abscess may occur almost anywhere in the adnexa. The abscesses may form in the uterine wall, in the folds of the ligaments, or in the culdesac or tubes. These abscesses all originate from the foci implanted in the endocervix. They are the result of an infected blockade having their origin in the lower stratum of the genital organs.

Take the case of recurring tubal inflammations. The tubes are considered as free of the gonococci in about two weeks after fever and leukocytosis have disappeared. But if the woman receives intercourse, especially with an infected partner, the seeds of disease are thus constantly resown in the cervix and urethra and, accordingly, there arises a fresh batch of bacteria to travel upward through the usual route and set up a new cycle of fever and leukocytosis in the tubes. After repeated gonococcal attacks of the tubes both ends of the tube may seal up, and then under heat, moisture and bacterial infection, localized necrosis takes place and a pus tube is produced. Pus tubes then are nothing more than the result of repeated autoinfections originating in the cervix or urethral racemose glands. When these inflammatory exudates appear anywhere in the uterine littoral, we have learned through experience not to be too hasty to do radical surgery in the upper pelvic region. Instead of opening the abdomen and removing everything that looks inflamed, it would be better to remove the cause

and establish drainage. The cause will be found in most cases to be an infected cervix or urethra, or both. Whatever operative method is applied to the cervical area, whether it be actual cautery, radium, or Strumendorf's cone excision, the complete destruction of infected racemose glands in the cervix is necessary. If found in the urethra, similar treatment, together with canal drainage, will be in order. Amputation of the cervix, initiated a century ago, is not to be considered, especially in the period of child-bearing. The above operative methods, coupled with rest in bed, protein therapy in selected cases, and absence of copulation, especially if the partner carries an urethral infection, will, in the majority of cases, effect a cure as far as may be possible.

#### CURETTAGE

In closing I wish again to dwell with emphasis upon the needless and destructive operation of curettage which has become very popular with both the laity and general practitioners. I once heard one of America's foremost surgeons say that this useless operation, so commonly done, has a tendency to send the patient into early menopause by denuding the uterus of its mucosa. Curettage, I have often thought, is but a shield to hide the ignorance of the surgeon who has not had his attention called to the need of centering his endeavor to the area where the trouble began. How can the curette cure a condition in which the uterus is in a condition of pathologic stasis, with ligaments and tubes that are distorted and functionless, and where a fibrous condition not only has replaced the normal contractility of the uterus, but where the pampiniform plexus is one mass of varices with possible infected thrombi? Will a blind scraping of the corrugated uterine mucosa produce a cure? And further, in the earlier stage of the pathology, should curettage be done? For what cause would you curette the endometrium, unless for diagnosis with the thought in mind of an immediate follow-up operation if such were necessary? To tear the uterine mucosa into shreds in the belief that it will effect a cure, where the real cause is afar off, is a most senseless and wicked procedure. Commonsense and science both cry out aloud to keep the murderous curette out of the uterus. *The endometrium is the sacred soil of human genesis.* It is the holy of holies of the female body, and as such should not be invaded without cause.

We conclude by saying that pelvic surgery for inflammatory lesions resulting through endocervicitis will be greatly modified in the future, because the surgical mind will learn more concerning the causes. Proper treatment directed to the cervix, coupled with the advice of Curtis, "absolute clinical conservatism" will keep many women on this earth instead of bringing about too early a transformation into the angels to which they are all eventually destined to become.

#### SUMMARY

1. Endocervicitis is the result of infection originating in the racemose glands of the cervix or urethra. Bartholinitis is always secondary.

2. Leukorrhea is the result of endocervicitis, and may be either gonorrhreal or nongonorrhreal in character.

3. Age and social position should not deter the physician from making a clinical examination of the patient. Gonorrhea may exist in the very young and in the advanced middle-aged; in the rich or in the poor.

4. The cervical blockade, induced by endocervicitis, causes stasis of all the organs reached by contiguity or blood and lymphatic circulation. Stasis of the musculature, too long continued, may produce fibrosis of the uterus with degeneration of the endometrium. Undoubtedly many miscarriages occur as a result of uterine fibrosis of varying degree and, possibly, placental adhesions at times.

5. Uterine stasis produces circulatory congestion in tubes and ligaments, predisposes to many ills, induces neurosis, barrenness, and abscesses.

6. Surgical measures attacking the upper pelvic region should be secondary to surgical measures directed toward the infected cervix and urethra.

7. Curettage, as commonly practiced, is unscientific and harmful. Rest, physical and sexual, coupled, if need be, by rational medical and surgical therapy, with reasonable time for absorption of inflammatory exudates, will, in the majority of cases, give results satisfactory to patient and physician.

Reno, Nevada.

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#### DISCUSSION

W. M. EDWARDS, M. D. (Portola).—The frequency with which one encounters endocervicitis in general surgical practice, the chronicity of its course, and the twin factors of treatment and reinfection, all are parts of a complex problem.

Because of the extremely complicated anatomy of the cervix, infecting organisms burrow into and invade the depths of the glandular structure.

Once the cervix is thoroughly infected, local treatment practically resolves itself into a matter of destroying the infected pockets and promoting drainage by some electro-cauterant, electro-incisional, or diathermic treatment.

Generally it is necessary to repeatedly do one or more of these procedures.

Finally, endocervicitis is a disabling disease during the sexual life of the victim, and we must squarely face the problem of controlling the patient's sexual existence over a considerable span of months.

Failing in this there becomes established a vicious circle of infection and reinfection, with extensions to other parts of the genital tracts in both the woman and her male partner.

This constitutes a very real menace.

C. F. FLUHMAN, M. D. (Stanford University Hospital, San Francisco).—The infections of the cervix uteri, as Doctor Bath has pointed out in his article, are a very important clinical manifestation of pelvic inflammatory disease. Although I question very much whether the actual pathologic process in the cervix itself can lead to many changes in the body of the uterus, there is no doubt that it is the most important portal of entry for bacteria in their invasion of the parametrium and the uterine appendages.

The inflammatory reactions of the cervix uteri are of great interest and lead to various abnormal epithelial proliferations which have been the subject of extensive investigation in the Stanford gynecological laboratory during the past few years. These formations are of considerable importance in dealing with the incidence of cancer in this organ, and it is generally stated that neglected cervical infections furnish the "irritation" factor which frequently leads to the development of malignancy.

The indiscriminate use of the curette in the treatment of "leukorrhea" is very much to be deprecated. It must be remembered, however, that this operation is of invaluable assistance in the diagnosis of functional changes in the endometrium in cases of abnormal uterine hemorrhage.

#### EPINEPHRIN AND RELATED DRUGS\*

##### CIRCULATORY RESPONSES THERETO AND MODIFICATIONS BY LOCAL ANESTHETICS

By M. L. TAINTER, M. D.  
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THE use of cocaine as a local anesthetic is frequently accompanied by alarming reactions and even fatalities. The varied symptomatology of these responses indicates complex systemic actions of the cocaine. These systemic alterations are not necessarily accompanied by marked symptoms, and therefore may attract little interest until attention is forced on them by a serious reaction. In addition, the sudden, unpredictable occurrence of the reactions, the apparent lack of correlation with the amount of cocaine used, and the futility of certain remedies tend to create a rather fatalistic attitude among surgeons toward these side actions. The proper handling of these emergencies must rest on an appreciation of the mechanism of the reactions, and of measures with which they may be treated.

Studies during the last five years in our laboratory have brought out certain new facts which bear on these problems, and it may be in order to summarize briefly these results insofar as they bear on the present topic. In a word, they show that cocaine causes complex alterations in the responses of the circulation to certain stimulants, and these alterations in turn indicate fundamental neuromuscular derangements.

In 1910 Fröhlich and Loewi<sup>1</sup> observed that cocaine increased the blood pressure response to epinephrin. This was left unexplained and attracted little attention at the time. Since epinephrin is a specific stimulant of the sympathetic

nerves (myoneural junctions) and cocaine affects the epinephrin action, in otherwise ineffective doses, the increase of blood pressure is due to a sensitization of cocaine on the sympathetic nerves. In 1925 the author<sup>2</sup> discovered that cocaine not only increased the pressor response of epinephrin, but simultaneously diminished or abolished that to tyramin in the same animal. Before that time tyramin was supposed to act nearly identically with epinephrin. However, this contrast in the actions of these two drugs in the cocainized organism immediately indicated that the sites of their circulatory actions were different, and this difference was revealed through an otherwise ineffective dose of cocaine. It showed, further, that the actions of cocaine were more complex than had been suspected, since it could simultaneously sensitize and desensitize to similarly acting compounds. The exact mechanism of action of these compounds need not be considered here. Since the initial work, the sensitization-desensitization phenomena have been applied by several investigators to the study of many of these drugs such as ephedrin, phenylaminoethanol, synephrin, etc.

##### DESCRIPTION OF THE SENSITIZATION-DESENSITIZATION PHENOMENA

In a typical experiment the changes in blood pressure and pulse rate from epinephrin and ephedrin (or other pressor drugs) in a cat or dog are recorded, and then a small dose of cocaine is injected subcutaneously. After allowing about fifteen minutes for absorption, the control doses of the two pressor agents are reinjected. The rise of blood pressure from epinephrin is greatly increased in height or duration, or both, and the usual increase in pulse rate is still obtained. But ephedrin now causes little or no effect on either blood pressure or pulse rate. In other words, epinephrin responses are sensitized while ephedrin is desensitized or abolished.

By injecting other compounds, sometimes classed as sympathomimetic amines, in cocainized animals it was found that those drugs which are most closely related chemically to epinephrin, such as the synthetic racemic, dextro- and levo-epinephrin, epinin, and adrenal, were all similarly sensitized,<sup>3</sup> whereas tyramin,<sup>2</sup> ephedrin,<sup>4</sup> pseudoephedrin,<sup>5</sup> phenylaminoethanol,<sup>6</sup> and other compounds less closely related but classed in this group, were desensitized. Of great interest was the fact that synephrin, the latest of these substitutes, was neither sensitized nor desensitized, but retained its circulatory actions unaltered by cocaine.<sup>3</sup>

These altered reactions were not confined to the smooth muscle of the blood vessels, but appeared also in other smooth muscles. Thus, the response of the intestine *in situ* has been shown to be altered simultaneously with the circulatory responses.<sup>2</sup> Similar results with excised intestine have been obtained in experiments now in progress. An antagonism between the broncho-dilator actions of the epinephrin substitutes and cocaine has recently been reported.<sup>7</sup>

The dose of cocaine required to cause these changes was somewhat variable, as little as five

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<sup>1</sup>Read before the Anesthesiology Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

milligrams per kilo having been effective, and fifteen milligrams per kilo being uniformly so. It is not known how long the sensitization may persist, but it has been observed as long as three hours after a single administration of cocaine in anesthetized animals. This is a considerable period of functional alteration. A point which must be emphasized is that these doses of cocaine might not ordinarily be considered toxic, since they caused little or no change in either blood pressure, pulse, or respiration.

Of the local anesthetics thus far studied, cocaine has been the only one to cause persistent alterations after subcutaneous administration. Procain, butyn, and saligenin did not alter the circulatory response in a similar manner, when injected subcutaneously.<sup>2</sup> However, it has been reported by Eggleston and Hatcher<sup>8</sup> that procain, B-eucain, apothesin, and certain less important anesthetics do sensitize to epinephrin upon intravenous injection. The sensitizing effects of these local anesthetics on the circulation must be very fleeting, and, as far as we know, nothing has been reported as to their effects on the responses to the other amines. It is hoped to obtain more data on the relative actions of these local anesthetics in future.

#### MECHANISM OF THE DESENSITIZATION BY COCAIN

The mechanism of the sensitization by cocaine to epinephrin has already been discussed in the first part of the paper.

The mechanism of the desensitization is even more interesting and important, although not yet completely understood. Certain pharmacological proofs may be cited. The pressor response to barium, a powerful muscular stimulant, in definitely effective doses is not altered by cocaine. The vasoconstrictor action of weak concentrations of barium on the blood vessels of excised organs is abolished or reduced in about one-half the experiments.<sup>2</sup> Since barium stimulates the smooth muscle of the vessels independently of their innervation, this shows that the muscle, when weakly stimulated, is sufficiently depressed by the cocaine to prevent its usual responses. The same is true of the comparatively weak muscular stimulants, tyramin,<sup>2</sup> phenylaminoethanol,<sup>6</sup> and ephedrin.<sup>4</sup> These drugs exert typical pressor actions in ergotoxized animals in which the sympathetic vasoconstrictors are paralyzed. This, of course, correlates with the complementary proof in cocained animals in which they act differently from epinephrin. That the vascular muscle is not paralyzed is seen from the facts that strong barium stimulation and indirect stimulations by epinephrin cause the usual or increased rises regularly after cocaine. This difference between the efficiency of strong and weak stimulants is illustrated time and again in pharmacology. In the case at hand, it simply means that cocaine, in otherwise ineffective doses, does poison (depress) sufficiently the smooth muscle or receptive mechanism of the blood vessels so as to make it incapable of responding to weak stimulants; in

other words, a sort of vascular "shock." Changes in the functional activity of the cardiac muscle were not the basic causes of the altered responses by cocaine, since the high pressures after epinephrin could scarcely have been produced with a heart muscle so depressed as to be unable to withstand the smaller rises from the desensitized amins; that is, the heart was capable of functioning even better than before, against the increased peripheral resistance. Moreover, electrocardiographic studies<sup>9</sup> showed that the doses of cocaine used to produce the usual sensitization-desensitization phenomena did not alter the intrinsic nerve mechanisms or muscular responses of the heart, as mirrored in the electrocardiogram.

Central vasomotor actions were readily ruled out since destruction of the brain and spinal cord did not interfere with or prevent the alterations in the circulation caused by cocaine.<sup>2,4</sup> Of the peripheral sympathetic nerve mechanisms, *i. e.*, the nerve trunks, endings and myoneural junctions, none is demonstrably depressed, matters that were determined by electrical stimulation of the splanchnics, and also with epinephrin, as already mentioned. Therefore, as the result of direct and indirect tests along different lines it is concluded that the probable seat of the cocaine-desensitization of the pressor responses of ephedrin and other amines is, in part at least, in the smooth muscle of the blood vessels, the action being in the nature of a depression or "shock" of the muscle, while the vasomotor nerve endings are made more excitable. Thus, there is a peculiar mixture of depression and apparent excitation of the peripheral neuromuscular mechanism of the blood vessels throughout the body. It is clear that absorbable doses of cocaine quickly cause a sustained modification of important bodily functions with potentialities for harm to the organism.

So far as the seat of ephedrin action is concerned, certain authors<sup>11,12</sup> have recently expressed contrary opinions, or doubted the significance of my data for a muscular stimulation. Unfortunately these opinions are rendered untenable by a failure to give adequate and critical consideration of established evidence; these will be dealt with separately.

#### CLINICAL APPLICATIONS

This complex combination of actions is not only of theoretical interest, but has a direct clinical application, since it always occurs whenever cocaine is absorbed, even in otherwise ineffective doses, as in local anesthesia. If a circulatory stimulant should be needed during a reaction accompanying local anesthesia with cocaine, the use of epinephrin might be dangerous because of the greatly increased pressor response that will be obtained. The latter might result in sudden cardiac dilation or in apoplexy and thus aggravate the collapse; and the violence of any systemic symptoms from epinephrin would be increased. Resort to one of the epinephrin substitutes would be futile, since either tyramin, ephedrin, or phenylaminoethanol would be ineffective. As far as

I know, the only available compound of this group which would exert its actions unaltered is the new one, synephrin.

Attempts to avoid the toxicity of the cocaine-epinephrin combination, used in the nose and throat, by substituting some of the other vasoconstrictors is also unpromising, since the local vasoconstrictor power of ephedrin and phenylaminoethanol in the nose is lost in the presence of cocaine,<sup>10</sup> just as it is on systemic administration. Similarly, the asthmatic type of reaction in cocaine poisoning could not be adequately treated with ephedrin, since cocaine antagonizes bronchial muscle responses as well.

Thus, it is seen that what was originally only an interesting pharmacological experiment has important fundamental bearings on the exact determination of the seat of action of the so-called "sympathomimetic" amines, and also strong clinical implications.

#### CONCLUSIONS

1. Cocaine, but not procaine, butyn and saligenin, injected subcutaneously in doses (5 to 15 milligrams per kilo) corresponding to those used in infiltration anesthesia, profoundly modifies the circulatory responses to epinephrin, ephedrin, and related drugs.

2. The modifications consist of sensitization, desensitization, or complete abolition, of the circulatory responses (blood pressure and heart rate), according to the drug used.

3. Cocaine also modifies the responses of the blood vessels (nose, etc.) to vasoconstrictor drugs after local application, and of the bronchi to bronchodilator agents used systemically.

4. These phenomena are possible whenever cocaine is absorbed, even in otherwise ineffective doses, and are of importance in the systemic reactions of cocaine poisoning, and in treating accidents of local anesthesia.

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## AGRANULOCYTIC ANGINA\*

### REPORT OF CASE

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DISCUSSION by Arthur M. Hoffman, M. D., Los Angeles; Albert Soiland, M. D., Los Angeles.

AGRANULOCYTIC angina is an acute systemic disease of unknown etiology, characterized anatomically by leukopenia, a pronounced reduction or total absence of granular leukocytes in the blood and hematopoietic organs, and an ulcerative or gangrenous inflammation of the buccopharyngeal membranes; clinically by hyperpyrexia, asthenia, and, commonly, an early fatal termination.

#### HISTORY AND LITERATURE

If we look back upon the literature of former decades, we find as early as 1880 that anginas were mentioned which were marked by the necrotic character of the pharyngeal tonsils and their surrounding tissues, and which terminated fatally for the patients. These anginas were differentiated from diphtheria even at that time. We are reminded of case reports by Wheit in 1885, Cohn in 1893, Noltenius in 1900, Schwarz in 1904, Turk in 1907, and Marchand in 1913, which presented pictures which today are recognized as agranulocytic angina.

It was not, however, until November 1922 when Werner Schultz presented his series of five cases in considerable detail, designating the disease as agranulocytosis, that the medical profession became conscious of the presence of a new clinical syndrome or entity. Since that time reports and discussions have appeared in the literature with increasing frequency under the heading "Agranulocytosis," as used by Schultz, or "Agranulocytic Angina," as used in 1923 by Friedmann. Thus, while in 1922 only one article appeared, there were three in 1923, four in 1924, eleven in 1925, eleven in 1926, twenty-eight in 1927, and nearly forty in 1928. These articles have appeared in the order of frequency from the following countries: Germany, Austria, United States, Canada, France, Netherlands, Italy, and Sweden. No cases seem to have been reported in Great Britain.

In surveying the literature I have collected 168 cases reported as agranulocytic angina, and in the bibliography to this article cite the names of the authors who reported the same. No claim is made of an exhaustive analysis and report of literature, for references to many an article were obtained which were inaccessible, particularly foreign contributions. Could these reports be included, the number of published cases would undoubtedly exceed two hundred.

However, not all cases reported as agranulocytic angina can be accepted as such. Thus, as has been previously pointed out, one of Kastlin's cases was an acute arsphenamin poisoning, and Allan's case with thrombocytopenia and purpura hardly fall within the category of agranulocytic angina.

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## REPORT OF CASE

P. R., a miner, age seventy, entered the Santa Fe Hospital at Los Angeles November 27, 1928, complaining of burns of both feet sustained almost three months previously while working in hot sand barefooted near Death Valley. Treatment by local physician with ointments and hot compresses had been futile. Previous illness, typhoid fever. No accidents or operations. Habits were moderate. Diathesis was negative for tuberculosis, malignancy, or blood dyscrasias. Further questioning as to symptoms of systemic disease proved futile.

**Physical Examination.**—A well nourished and developed white male with an apparent vigor and vitality exceptional for his age. Temperature, pulse, and respiration were normal. Blood pressure, 206/120. The eyes showed arcus senilis, but the pupils were regular and reacted to light and accommodation. Teeth were in a poor state of repair, and oral hygiene was poor. No chest pathology. No evidence of cardiac hypertrophy or dysfunction was detected. There was a moderate amount of arteriosclerosis of the peripheral vessels. The abdomen, genito-urinary tract, and skin were negative. No adenopathy. Superficial and deep reflexes reacted normally. Examination of the feet showed the distal phalanx of the fourth right toe missing, a second degree burn on the medial surface of the right third toe, and absence of the nail from the left fifth toe. The skin on both feet was somewhat parched; walking was quite painful.

The laboratory reported a hemoglobin of 100 per cent, a leukocytosis of 23,000 with 82 per cent polymorphonuclears; a urine free from albumin, sugar, casts, or pus; a blood sugar of 93 milligrams, and a negative Wassermann.

Treatment consisted of antipyrexol dressings, potassium iodid, grains 15, three times a day, and Buerger's exercises.

Progress was somewhat slow, but on the whole satisfactory, the temperature remaining normal and the burns improving.

On January 12, 1929, forty-seven days after the patient entered the hospital, he developed a temperature of 102 degrees and complained of a sore throat. Inspection revealed a marked redness and inflammation of the throat with a white, greenish exudate high in the left tonsillar fossa. A complete blood count was done and the following report returned: hemoglobin, 86 per cent; red cells, 5,240,000; leukocytes, 3300, with 100 per cent lymphocytes. The urine contained acetone and diacetic acid. On the sixteenth the white count was repeated. The report was 3000 with 100 per cent lymphocytes. A throat culture was negative for diphtheria and *B. pyocyaneus*. The temperature ranged from 100 to 102 degrees.

By January 18 the exudate, which was fairly well localized to the left tonsil, had become ulcerated and more than triple in size. The gums and left buccal membranes were involved with white patches. The sclera had an icteric tinge. The patient was toxic and in an evident critical condition.

A blood count was done again on the nineteenth, revealing a hemoglobin of 67 per cent, 900 leukocytes with no granular cells seen. The platelet count was 320,000. The blood culture was negative. The patient was now deeply jaundiced and comatose. The temperature dropped to 96.6 degrees, and he expired the same night, eight days after the onset of the acute condition.

Treatment was symptomatic throughout the course of the agranulocytic angina, with gargles, mercurochrome swabs, and antipyretics. Leukocytic extract was administered daily intramuscularly during the last five days. Three-tenths gram of neoarsphenamin was given intravenously the day before the patient's death.

**Autopsy** was performed by the county coroner, who rendered the following report: "The body was very yellow on exterior. Heart and lungs were negative. Liver and gall bladder and kidneys were not dis-

eased. The spleen was moderately large and firm, with white pinhead-sized spots on capsule. Cause of death: Agranulocytic leukemia associated with ulcerative tonsillitis and pharyngitis; possible contributory factor, second degree burns of feet."

Sections were obtained from the bone marrow of the middle one-third of the femur, the liver, spleen, and kidneys, which had one common denominator: no granular cells were to be found in any section. The bone marrow was yellow and fatty, showing no cellular reaction whatever, and a dearth of granulocytes or their prototypes. The kidneys were quite normal except for cloudy swelling. The liver showed small areas of necrosis with lymphocytic, but no granulocytic infiltration, in addition to cloudy swelling. The spleen showed an exaggerated number of reticulo-endothelial cells in the sinuses, but no polymorphonuclear leukocytes could be found here either.

## COMMENT

This case is unique in that it occurred during hospitalization for another ailment, only four similar cases having been reported previously. With one exception, this patient was the oldest of any reported cases afflicted with agranulocytic angina. It is further interesting to note that upon entrance to the hospital the patient possessed a normal mechanism of response to infection, carrying a leukocytosis of 24,000 with a normal percentage of granular cells, thus disproving one theory that agranulocytic angina is due to congenital hypoplasia of the bone marrow with consequent inability to ward off infection.

## ETIOLOGY

The exciting cause of this malady is not known. Females are more susceptible than males, the ratio of morbidity being 3.8:1. The majority of cases are middle-aged, between thirty to fifty. The mathematical mean was forty years of age in this series. The youngest patient was a boy four and a half years old, the oldest a man seventy-nine. Season and climate do not appear to exert any influence. Heredity seems to play no part, although Hart reports two cases occurring in sisters. All evidence points against any epidemic or contagious element. One attack apparently does not confer immunity, for a case is on record where the patient recovered from a first attack only to succumb to the second two years later. Generally rundown, weakened conditions, and previous diseases, the most common of which are rheumatism and arthritis, must be considered as predisposing causes.

Many adhere to a bacterial origin. Positive blood cultures were obtained in 12 per cent of cases here reviewed, in the following order of frequency: streptococci (30 per cent), staphylococci (20 per cent), *B. pyocyaneus* (20 per cent), pneumococcus (15 per cent), Friedlander's pneumobacillus (10 per cent), and *B. coli* (5 per cent). *Bacillus pyocyaneus* and *B. staphylococcus aureus* from two patients, injected into rabbits, caused death in two days. *B. pyocyaneus* from another produced a leukopenia in rabbits. But the clinical picture cannot be produced by intraperitoneal injection of whole blood into guinea-pigs; neither will the exudation of the ulceronecrotic lesions of the throat of patients, placed on the tonsils of rabbits, produce the lesion.

Adherents to the theory of bacterial origin believe the syndrome represents an atypical reaction of the hematopoietic system to septicemia, due either to bacteria with a specific affinity and toxicity to the granulocytic system, or to an atrophy or hypoplasia of this organ because of septic infection. This bacterial cause may be nonspecific, or specific: *B. pyocyaneus*, streptococci, or fusospirilli.

Sundry other theories as to pathogenesis exist. Some students attribute the unknown cause of the leukemias to that of agranulocytic angina. Duke considers it a manifestation of aplastic anemia. Aubertin believes the agranulocytosis due to a degeneration of the medulla as the producing center of granular leukocytes, this degeneration in turn being due to some unknown toxin. Friedmann is probably alone in his contention that it is due to an endocrine disturbance. He also suggests that the pathogenicity for the two sexes may differ.

#### PATHOLOGY

The tissue changes found in agranulocytic angina are quite constant. Indeed, Schultz contends that this is a separate and distinct disease entity, basing this contention on the uniformity of the pathological findings.

There may be only a few superficial ulcers on the tonsils, or there may be extensive, multiple, deep gangrenous lesions involving not only the membranes of the buccal and pharyngeal cavities, but those of the entire gastro-intestinal tract. An ulcerative colitis is also commonly present. Campbell reports a case where ulcerations were found surrounding the anal orifice only, while Murphy describes one patient who presented no ulcers during life. These, however, are the exceptions. The ulcers are usually covered with a grayish white coat, often closely resembling a diphtheritic membrane.

The inflammatory sites wherever found have a similarity of appearance. Microscopically, we will find superficially a necrotic, granular material intermingled with numerous bacteria. Looking deeper, we notice the cell outline intact, but streak-like accumulations of bacteria may be found in the intercellular spaces. The vessels are often thrombotic, containing hyalin, fibrinous material, or clotted blood, in which the absence of leukocytes is striking. Smaller and larger accumulations of lymphocytes and plasma cells may be present in varying numbers, but only rarely, if ever, will we find any granular cells about the ulcers.

The gangrenous pharyngeal process is now generally accepted as being secondary to the disease of the leukopoietic system, the lack of neutrophilic cells causing a deficiency in the tissue resistance. This is quite strikingly confirmed in Bantz's cases, the anamnesis of two of them indicating a considerable fatigue for two weeks, while a pharyngeal process was lacking. Murphy's case further substantiates this view.

Subpleural hemorrhages are not uncommon. Fibrinous exudate may cover the pleura in places, in which dark red, solid, irregular small foci are

present in the lung. Such areas are quite regularly found, especially in the lower lobes, which may also show hypostatic pneumonia. The capillaries of these solidified parts are hyperemic; the alveoli are filled with red blood cells and in places with bacterial masses. Adjacent alveoli contain an albuminous or fibrinous material. The absence of leukocytes in the foci is most striking.

The liver is often slightly enlarged with evidence of cloudy swelling. Microscopically varying degrees of fatty degeneration, multiple focal necrosis, and a proliferation of Kupfer's cells exist.

The spleen also is frequently somewhat swollen. It is generally dark red and firm, rarely soft as in septicemia. The lymph follicles are not prominent on the surface. There is a hyperplasia of the sinus endothelium at the expense of the lymphocytic tissues, the endothelial cells comprising as high as 90 per cent of the entire splenic substance. Cells which give a positive oxydase reaction are not found.

The kidneys commonly show only signs of cloudy swelling, with hyperemic glomeruli, degeneration of the tubular epithelium, and the tubules filled with casts. Occasionally severe kidney damage is found with many bacterial emboli throughout the cortex, but with no evidence of inflammatory changes.

Very striking changes are found in the bone marrow. No cellular response toward the lack of cells is found, as in the leukemias. Instead we find a persistent dearth of cells positive for the oxydase reaction. Erythroblasts and megakaryocytes are present in approximately normal numbers. That this finding is not due to post-mortem, or even agonal changes, was proven by Zadek, Schultz, and Jacobowitz, who removed bone marrow from the sternum during the height of disease which gave the same findings.

#### SYMPTOMATOLOGY

The onset is usually quite sudden, although it may be very gradual, the prodromata lasting weeks. Malaise, prostration, asthenia, and hyperpyrexia ranging from 101 to 104 degrees, are the common initial symptoms. The fever is maintained throughout the course of the disease with few remissions. Simultaneous with the fever, or a few hours following the same, the patient complains of a sore throat and dysphagia. Inspection of the mouth and pharynx reveals ulceromembranous lesions, not unlike diphtheria in appearance, but with no uniformity as to location, size, or depth. These areas spread with considerable rapidity, often involving the hard and soft palate, gums and tongue, as well as pharynx.

Some have reported a mild cervical adenopathy, but in the majority of cases no enlargement of the lymph glands is found.

About half of the cases develop jaundice, in varying stages of the disease and of varying intensity. I have not found any reported recoveries of patients who have developed jaundice.

The characteristic finding is obtained in the blood count. A striking leukopenia is encountered from the first, commonly increasing from day to

day throughout the course of the disease. The lowest count is reported by Schultz, who could find no leukocytes in one case; the highest count was reported as 10,000. The average lowest count obtained is 1500. The differential count reveals a pronounced decrease in the polymorphonuclear cells. Quite often no granular cells can be found whatsoever. Rarely no neutrophilic cells are encountered, whereas eosinophils may be found in small numbers (one to two per cent). The average percentage of granular cells is five, lymphocytes constituting practically exclusively the cytologic formula. No immature forms of leukocytes are found in true agranulocytic angina. The red cells and hemoglobin are not remarkable, often remaining present in normal proportions throughout. Commonly, however, there is a drop toward the termination of the disease. The thrombocytes also remain unaffected throughout the disease. No hemorrhagic tendencies are encountered.

The disease is usually of short duration. Nine days is the average in this series for those cases which terminated fatally. Two days was the shortest period, thirty days the longest. The duration is much longer in those patients who recovered, thirty-five days being the average.

#### DIAGNOSIS

The diagnosis is easily established if one bears the condition in mind and calls for a blood count routinely in all cases of sore throat. The hyperpyrexia, the ulcerative buccopharyngeal lesions, the leukopenia with diminution of the granular cells, and the normal platelet count can hardly fail to establish the correct diagnosis in the average case.

In those rare cases where no ulceration of the membranes occur, or where they occur in atypical locations, the diagnosis will have to rest largely on the blood findings alone.

#### DIFFERENTIAL DIAGNOSIS

1. *Diphtheria* is perhaps most commonly confused with agranulocytic angina. The confusion is the more common because *B. pyocyaneus* is so frequently recovered in cultures from the throat which, in degenerated forms, may closely resemble the Klebs-Loeffler bacillus. Differentiation is readily made by a Gram stain, the *B. pyocyaneus* being Gram-negative, whereas *B. diphtheriae* is Gram-positive. This is not done routinely in city health laboratories, however, and occasionally a practitioner is severely criticized and placed in an awkward position when he has not given diphtheritic antitoxin to a case of agranulocytic angina, and the health authorities report a positive culture. The blood count will decide.

2. *Septicemia* and its modifications frequently offer baffling difficulties in differentiating from agranulocytic angina. Indeed, many students consider this disease but one type of reaction to sepsis, as has been previously pointed out, and numerous cases reported as agranulocytic angina will be found to come under this heading. In these conditions, however, we will generally find a hemorrhagic diathesis, abscesses, primary infec-

tious foci, a positive blood culture, and myeloid proliferation in the bone marrow.

3. *Vincent's angina* causes ulcerations similar to those of agranulocytic angina, but a direct smear from the mouth readily reveals the causative organism, and a normal leukocytic reaction is the rule.

4. *Typhoid fever, influenza, and miliary tuberculosis* infrequently cause necrosis of the pharyngeal membranes, but their course and pathological manifestations should clarify their diagnosis.

5. *Monocytic angina* or infectious mononucleosis generally occurs at an earlier age, is equally distributed between both sexes, is accompanied by a generalized lymphadenopathy and splenomegaly, and the blood picture reveals a leukocytosis with an increase in the percentage of monocytes. Furthermore, the ulcerations, when they occur, are generally confined to the tonsils. There is no jaundice, the course is protracted, and the outlook is favorable.

6. *Aleukemic leukemia* often presents a hemorrhagic diathesis. There is usually a secondary anemia, thrombocytopenia, and a prolonged bleeding time. Tenderness over the lower end of the sternum is frequently elicited, and, finally, autopsy findings reveal leukemic infiltrations in the liver, spleen, lymph nodes, and kidneys.

7. *Hodgkin's disease* will rarely offer any difficulties of differentiation. However, Jaffe reports a case in all respects simulating agranulocytic angina during life, but on autopsy was found to have multiple abdominal glands typical of Hodgkin's. A wrong diagnosis is probably unavoidable in such rare conditions.

8. *Pernicious and aplastic anemia* present a pronounced reduction in red cells and hemoglobin which are not found in agranulocytic angina. The glossitis, achlorhydria, neurological findings and remissions further distinguish Ehrlich's anemia unmistakably.

9. *Toxins* such as arsphenamin, x-rays, benzene, radium, mesothorium, and thorium x, will produce clinical pictures identical with those of agranulocytic angina, and a negative history of exposure to any of these various agents is necessary before a diagnosis of agranulocytic angina can be established.

#### PROGNOSIS

The outlook is gloomy, but not infaust. Out of the 168 cases in this series, twenty-two, or 13 per cent, recovered, giving a mortality rate of 87 per cent. This is among the lowest figures encountered; generally the mortality rate is given as 93 to 95 per cent.

Jaundice seems an unfavorable sign; I have noticed no report of an icteric patient recovering. A protracted course is favorable; the majority who survive the first fourteen to eighteen days recover.

#### TREATMENT

There is no known remedy for agranulocytic angina. Most physicians have treated their cases symptomatically. Transfusions and intravenous administration of neoarsphenamin have been given most commonly, but with no greater per-

centage of recoveries than those cases who received no treatment. Good results have been claimed for intravenous administration of guanin hydrochlorid dissolved in 10 per cent hydrochloric acid, but the cure is all but worse than the disease, as the injection is excruciatingly painful.

A ray of hope is seen in the x-ray therapy as used by Friedman. In his article of May 21, 1928, Friedman reviews twenty-nine cases, five of which were treated with roentgen rays and recovered. Only two of the remaining patients recovered. His cases were given one-twentieth of a skin unit surface dose and deep therapy with six millimeters Cu filter over the long bones.

Based on this report, Call and others treated a patient with x-ray, using the following factors: 4 ma., 130 kv., 2 min., 6 mm. aluminum filter, 50 cm. distance. The first treatment was given over the lower extremities and over the throat; the second was given over the upper extremities and one minute was repeated over the femurs. The patient's white count at this time was 640, with 14 per cent polymorphonuclears. Within a few hours after treatment there was a marked increase in the prepolymorphonuclears, a gradual increase in the granular leukocytes and a decrease in the lymphocytes until the blood picture became normal. The authors admit that all these cases might have recovered without the use of irradiation, but felt that its use could do no harm. The prompt improvement in the blood picture and throat manifestations, and the final return to normal in all of the cases so treated indicates strongly that irradiation was responsible for the results.

Cognizance should be taken of the fact, however, that Zikovsky and Zikowsky used irradiation to the spleen and other organs prior to these reports, but without results.

#### SUMMARY AND CONCLUSIONS

1. History and literature is briefly reviewed and an additional case reported.

2. Agranulocytic angina is characterized by:

(a) Unknown etiology and pathogenesis. "The demonstration of bacteria in the blood is not a proof of an infectious nature of the disease, as bacteria are also frequently found in late stages of leukemia, and their presence is due to invasion of the body throughout areas of necrosis."

(b) Marked predominance in the female sex (3.8 to 1).

(c) Ulceronecrotic lesions, usually most marked on the buccopharyngeal mucosa, without the common mechanisms of defense surrounding same.

(d) Absence of appreciable tumefaction or metaplasia of hematopoietic organs, but a hyperplasia of the reticulo-endothelial system.

(e) Marked leukopenia with considerable diminution or disappearance of granular white cells, with absence of important modifications in number and quality of red cells and platelets.

(f) Alteration in the bone marrow characterized essentially by disappearance of granular cells.

(g) Hyperpyrexia, marked prostration, and commonly an early fatal termination.

3. Essential agranulocytic angina can usually be differentiated by its clinical and pathological symptoms from diseases showing a secondary agranulocytic complex.

4. The one form of treatment under which most patients have recovered is irradiation to the long bones, as used by Friedman. The development of this form of therapy is worth following.

610 South Saint Louis Street.

#### REFERENCES\*

#### DISCUSSION

ARTHUR M. HOFFMAN, M. D. (803 Medical Office Building, Los Angeles).—In the year since the patient whom Doctor Kahlstrom so adequately describes died, there have occurred in the city of Los Angeles five deaths and one recovery from agranulocytic angina. Since we have no reason to believe that the disease is any less prevalent in other parts of this country, it behoves everyone to be on the lookout for it. In fact its incidence can be described in the terms of Cabot, used about pernicious anemia, when he said, "The incidence of the disease is a good deal a matter of keenness on the part of the practitioners of any district."

Our desire to detect the disease should be primarily to attempt early treatment, for if diagnosed late, that is, a week or more after the onset of throat symptoms, the alarming mortality rate takes place and the possible effectiveness of the only hopeful measure we now possess is mitigated. X-ray of the long bones late is of no avail. I have seen two patients in the year since Doctor Kahlstrom's patient died, and both were given x-ray therapy only on the day preceding death. If delay in such therapy persists, the procedure will be discarded—possibly too soon for accurate estimate of its true value.

The presence of the agranulocytic blood picture without angina, in general sepsis as described by Blumer, is an interesting development in our knowledge of the subject. Further adequate case reports and studies like the above should in time give us a clearer insight into the mechanism of this aggravating bone-marrow reaction.

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ALBERT SOILAND, M. D. (1407 South Hope Street, Los Angeles).—Our experience in the radiation treatment of agranulocytic angina has been entirely limited to patients who were far advanced in the disease. One patient was first treated about five days after the onset of very acute symptoms. The white count at this time showed 500 cells, 99.5 per cent lymphocytes, and 0.5 per cent granular leukocytes. Roentgen exposure was given over three areas, both femurs and the upper spine, using 200 K. V., 60 centimeters distance, one-half millimeter copper and one millimeter aluminum filter, four ma. through the tube, and two minutes' time. The following day the white count showed 600 cells, with 100 per cent leukocytes. The same areas were again exposed, and the next day the count was 600 cells, with 98 per cent lymphocytes and 2 per cent granular leukocytes. The patient then showed a marked decrease in white cells, and died. This case was practically terminal when first treated, and we do not believe it possible to stimulate blood cell formation in a patient at this stage of the disease.

Two other very advanced patients whom we observed failed to show improvement.

The cases of recovery after radiation, reported by Friedman, are encouraging; but we believe that if any value is to be obtained from stimulative treatment of the long bones by radiation, this treatment must be given early in the course of the disease.

\* The complete list of references will be listed in the reprints. Copies of reprints may be had on request to the author.

## GIARDIASIS IN CHILDREN\*

## REPORT OF CASES

By S. J. McCLENDON, M.D.  
San Diego

DISCUSSION by Herbert Gunn, M.D., San Francisco; Francis Scott Smyth, M.D., San Francisco.

OUR experience with twenty-two cases of giardiasis in children between two and fifteen years of age has convinced us of the pathogenicity of this organism, and an analysis of these cases has shown us that the giardia flagellate may be responsible for a great variety of symptoms not necessarily associated with the gastro-intestinal tract.

## REPORT OF CASES IN LITERATURE

The giardia was first described by Lambl in 1854, but it was not until twenty-five years later that Grissi gave us our real information concerning this parasite. In 1892 the frequency of its infestation in children was noted by Moritz and Holzl<sup>1</sup> and in 1902 a case was reported in the United States (Baltimore) by Stiles.<sup>2</sup> Since that time occasional cases have been reported in the literature. In 1921 Maxcy<sup>3</sup> reported a series of eighteen cases and reviewed the work of British investigators who had found a high incidence of the disease in children. Other cases in this country have been reported especially by Noone, Waltz and Donnelly,<sup>4</sup> Peterman,<sup>5</sup> Stevenson,<sup>6</sup> and Zahorsky.<sup>7</sup>

## SYMPTOMS

In our clinic, routine stool examinations are made on all children and treatment is instituted for the giardia infection whenever it is found. Such treatment has resulted in clearing up many symptoms, both subjective and objective, associated not only with the gastro-intestinal, but also with the genito-urinary and central nervous systems. Such symptoms as abdominal tenderness, pain, nausea, and constipation are common complaints, but there are in addition many symptoms of less definite and concrete nature, such as nervousness, irritability, and easy fatigue, which disappear rapidly with the clearing up of the intestinal infection.

The symptoms encountered in our series of cases in the order of their frequency were: abdominal tenderness, especially over the ascending and descending colon, in seventeen patients; constipation in eleven patients, nervousness in ten, easy fatigue in seven, gas and belching in seven, inability to gain weight in six, poor appetite in six, irritability in five, headaches in five, enuresis in four.

It is to be noted that whereas diarrhea is one of the most frequent symptoms associated with intestinal infections, it was encountered in our series of giardia infestation in but one instance;

in marked contrast is the fact that constipation occurred in 50 per cent of the patients. Noone, Waltz, and Donnelly<sup>4</sup> also found constipation proportionally higher among those children who had giardia infections. Maxcy<sup>3</sup> found a tendency to increased defecation but no diarrhea. Several observers, however, notably Zahorsky,<sup>7</sup> Lynch,<sup>8</sup> and Miller,<sup>9</sup> have found diarrhea a constant finding in giardia infestations. Miller<sup>9</sup> considers the resultant diarrhea sufficient to retard growth and development; Lyon and Swalm<sup>10</sup> noted it during the acute stage of the disease and found it a more frequent finding in giardia infection in children than in adults where they found constipation to be the rule.

The subject of enuresis in children has always been a difficult problem and it is very interesting to note that in this series there were four patients with associated enuresis, all of which were entirely relieved with the clearing up of the giardia infection. In none of these four patients could any pathology be demonstrated in the genito-urinary tract.

## REPORT OF CASES

Brief reports are given to illustrate: one, a common type of giardiasis; two, giardiasis in a case simulating duodenal ulcer; three, giardia as the etiological factor in (a) a patient with so-called mucous colitis, (b) a patient with diarrhea, and (c) a patient with enuresis.

CASE 1.—A common type of giardiasis. A girl, eight years of age, was brought in with the diagnosis, made by the mother, of chronic appendicitis; this diagnosis was based on the recurrent attacks of abdominal pain. The pain was not localized, however, and was present on both sides of the abdomen. Other complaints were constipation, gas and belching, poor appetite, inability to gain weight, nervousness, and restlessness. A roentgen examination of the gastro-intestinal tract had been made elsewhere, but failed to disclose any pathology. Physical examination was essentially negative except for the laboratory findings which revealed a mild secondary anemia and a marked giardia infestation of the intestinal tract. Following treatment for the giardia infection all intestinal symptoms have disappeared and the general condition of the child is showing improvement. The stools were negative for giardia after four months of treatment and have remained so to date.

CASE 2.—Giardia and a simulated duodenal ulcer. The patient, a girl thirteen years of age, complained of pain and soreness in the epigastrum, gas and belching, constipation, frontal headaches, dizziness, and easy fatigue. The epigastric pain came on two or three hours after meals and was fairly constant in character. The nature of this pain was similar to that experienced by the patient's father, who had a duodenal ulcer and made the family suspicious of an ulcer in this case; they therefore requested that a roentgen study be included in our examination. Physical examination disclosed slightly septic tonsils with enlarged anterior and posterior cervical glands; slight uniform enlargement of the thyroid gland; and definite tenderness over the mid-epigastrum and the descending colon; the colon was also palpable at the point of tenderness. Blood cytology showed a hemoglobin of 88 per cent (Newcomer), and 12,400 white corpuscles with a normal differential count. The Kahn reaction on the blood serum was negative. Urinalysis showed a specific gravity of 1.103, two plus albumin, and one to two pus cells per high

\* From the Rees-Stealy Clinic, San Diego.

<sup>1</sup> Read before the General Medicine Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

power field. Stool examination revealed the presence of giardia cysts. The possibility of a slight hyperthyroidism which might be associated with the intestinal symptoms was ruled out by a basal metabolic rate of plus four. The roentgen examination of the gastro-intestinal tract showed a spastic duodenum but no definite ulcer; this spasm relaxed with atropin, as a subsequent x-ray plate taken three days later showed; neither spasm nor stasis was present on this examination. The only positive findings, therefore, were the slightly infected tonsils and the giardia infection which had probably localized in the duodenum and biliary tract, the common habitat of the parasite. Treatment for the giardiasis was accordingly instituted with the gradual clearing of all symptoms, including the albuminuria.

**CASE 3.**—Giardia and mucous colitis. Giardia was found to be the unsuspected offender in one case of so-called "mucous colitis" in a boy ten years of age. Constipation, mucus in the stool, and enuresis were the chief complaints in this patient. Physical examination was negative except for some distention of the abdomen and tenderness over the descending colon; urinalysis was negative, and the blood count disclosed nothing abnormal. Examination of the stool revealed a heavy giardia infestation. Following three courses of treatment, the stools became negative and have remained so for nine months, the mucus disappeared and the other symptoms cleared up.

**CASE 4.**—Giardia and enuresis. A girl, five years of age was brought to us complaining of nocturnal enuresis, increased urinary frequency during the day, and nervousness. These symptoms had been present for one and one-half years. Physical examination revealed slightly septic tonsils with no history of sore throats or frequent colds; enlarged anterior and posterior cervical glands and a palpable enlarged descending colon and sigmoid. Investigation of the genito-urinary tract disclosed no pathology. Blood count showed 4,728,000 red corpuscles; hemoglobin of 80 per cent (Newcomer); white corpuscles, 14,200; with a differential count of neutrophils, 51 per cent; lymphocytes, 4 per cent; large mononuclears, 4 per cent; and eosinophils, 16 per cent. Urinalysis was completely negative. Stool examination showed the presence of giardia. Tonsillectomy was advised but not performed. Complete relief of the enuresis and the disappearance of accompanying symptoms, however, followed the treatment for the giardia infection and the subsequent eradication of the flagellate.

**CASE 5.**—Giardia and diarrhea. A boy, seven years of age, was brought in to us because of incontinence of the stool and urine accompanied by a chronic diarrhea which manifested itself by eight or ten stools a day. The child was nervous and restless in his sleep; his abdomen was slightly distended and rectal examination showed some spasm of the lower rectum and internal sphincter. Treatment for the existing giardia infection brought complete relief of symptoms.

Case 4 is the only patient in our series in whom an eosinophilia was found and we have no explanation for it. All other case reports in the series bear out observations of other reporters, that the giardia infestation, unlike other parasitic infestations, is not accompanied by an eosinophilia.

#### TRANSMISSION

It is now a generally accepted view that transmission of the infection takes place through contaminated food and contact with infected individuals, though animals may be the intermediary hosts. The giardia cysts are very resistant to heat, and it requires five minutes' exposure to 64

degrees Centigrade to kill them. If bacteria and putrefactive products are removed by careful washing, the cysts will live in distilled water at a low temperature for several months; in formed stools they have been found viable for several days.

#### EXAMINATION OF STOOLS

In examining stools for giardia, at least three specimens are examined in each case. The first should be a warm specimen, following a saline laxative; this is either passed at the office or brought in in a thermos container; the other two specimens should be formed stools. The duodenum is a more common habitat of the giardia than is the lower intestinal tract and it is probably for this reason that motile giardia are rarely found in the stools, but pass from the intestine in the encysted form. Of all the protozoan cysts they are the most easily identified and after a suspension in normal saline is examined under a cover slip, identification can almost always be made by the use of Donaldson's iodin-eosin stain or a modification thereof; rarely degenerated forms are found and Heidenbain's iron-hematoxylin stain must be used.

#### TREATMENT

Our treatment of giardiasis in children consists in the administration by mouth of bismuth salicylate and treparsol. Bismuth salicylate is given daily for ten days in doses of from five to ten grains; this is followed by a rest period of one week. Treparsol in doses of from two to four grains, twice daily, is then given for ten days. Following a second rest period of one week, a second course of the two drugs is given in the same manner. Three or four courses of medication are sometimes required before a negative stool is obtained, and the treatment should be continued until the parasite is eradicated. During treatment the patient is kept on a non-irritating, low residue diet.

Stool examinations are made at intervals of three months over a period of from one and one-half to two years following the first disappearance of the flagellate from the stool so that prompt treatment may be instituted in case of recurrence. No recurrence has been noted in our series.

We have used treparsol rather than stovarsol in our method of treatment because of its lessened toxicity and also because of the greater amount of arsenic available in treparsol. In no patient so treated did an arsenical dermatitis develop.

#### CONCLUSIONS

1. From a careful study of a series of twenty-two cases of giardiasis in children, we believe that the giardia is a definite factor in the etiology of many symptoms referable not only to the gastro-intestinal but also to the genito-urinary and central nervous systems. We believe that routine stool examinations should be made in all cases and treatment instituted for the giardia in-

fection whenever it is found. Our experience has demonstrated that such treatment may clear up many symptoms which have no apparent association with gastro-intestinal disease and in connection with which the presence of a giardia infection would not have been suspected.

We also wish to reiterate our observation that diarrhea is not a common symptom of giardia infection in children; it occurred only once in our series, whereas constipation was present in 50 per cent of the cases.

2. We have found the use of bismuth salicylate and treparson with a nonirritating, low residue diet, a very effective form of treatment and by this means we have been able to clear up the giardia infection in every patient in our series.

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#### DISCUSSION

HERBERT GUNN, M. D. (2000 Van Ness Avenue, San Francisco).—Doctor McClendon in his article on "Giardiasis in Children" states in his opening remarks that his experience with the twenty-two cases described convinces him of the pathogenicity of the organism.

It would appear to me that such a conclusion is hardly justified as he has adduced no evidence to show that the symptoms complained of in this group of patients were in any way related to the giardia infection, unless one considers the improvement noted after treatment as such. Of course disappearance of symptoms with the disappearance of a parasite following a specific treatment is suggestive evidence that the parasite so removed is the cause of the trouble, but by no means absolute proof of it. *Amebae coli*, if present, might readily be removed by the treparson used and yet it would probably have no connection with the symptoms present. Drugs like treparson have many effects on the body tissue as well as on some of the protozoa. Furthermore, the effect of proper dieting and general hygienic measures must be considered in connection with the effect of the drugs used. The most interesting aspect to me of Doctor McClendon's article is the fact that I have long ago demonstrated quite thoroughly to my own

satisfaction that the arsenicals have not the slightest effect on the eradication of giardia. For over fourteen years I have used neosalvarsan (the effects of which are practically identical with those of treparson) in the treatment of amebic infections and it was noted that the drug had no effect on giardia when present. I have used stovarsol in a number of amebic cases where giardia was also present, with the same result. I have seen quite a number of patients who had been treated by others, some of them over long periods of time, for giardia infection, most of them having received arsenicals in addition to various other drugs and in none of these patients was the giardia absent. The more work that one does with the giardia the more one comes to realize how elusive this parasite may be. It not infrequently disappears temporarily from the stool; to be certain that it is absent one must go over a series of stools passed on consecutive days; and even such a test, if negative, may be proved erroneous on repeating the procedure. However, I believe that proper methods of examination of the stool, especially if a concentration method is used, such as that of Adams and Yorke, will demonstrate the presence of giardia no matter what drugs are used. These views, I may state, have been expressed by many competent observers in various parts of the world. A very interesting article by McGath and Brown of the Mayo Clinic, which covers the subject of the pathogenicity of giardia, was published in the March journal of the *American Journal of Tropical Medicine*. They discussed 267 cases of giardia infection with 420 control cases which did not have giardia present. I will quote a paragraph from this article:

"It is obvious from our study that no chain of symptoms can be ascribed to the presence of either chilomastix or giardia. Not only can the whole group of cases be matched by a control group in which the patients do not have parasitic infestation, but individual cases can be accurately duplicated; even the indefinite condition known as chronic nervous exhaustion was not more prevalent in persons infected with chilomastix and giardia than in the control group."

In my own experience with giardia I have yet to see a single patient where I could definitely connect symptoms with the parasite. I have a number of patients harboring giardia whom I have watched over considerable periods of time and in none of these have symptoms ever occurred which it was necessary to ascribe to this parasite.

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FRANCIS SCOTT SMYTH, M. D. (University of California Hospital, San Francisco).—A rather limited experience in the field of parasitology makes one hesitate to discuss the paper of Doctor McClendon. About a dozen children in the University of California Hospital ward in the past few years have shown the presence of giardia on stool examination. However, there has been no uniformity with regard to symptoms or complaints, and in several instances the patients were admitted for obvious pathology quite remote from the gastro-intestinal tract, the presence of giardia being discovered by chance stool examination. In other cases the giardia were found associated with parasites of unquestioned pathogenicity such as *Entameba dysenteria*.

Experience of this type leads one to question the rôle of giardia. Previous reports in the literature do not settle the matter of pathogenicity and, as Doctor Gunn mentions, the fluctuations in the appearance and disappearance of the parasite make conclusions concerning therapy difficult. Certainly many observers have noticed little effect from arsenicals, the parasite varying regardless of therapy. It would facilitate

our knowledge as to the pathogenicity of the organism were the following known:

1. The incidence in the stool of normal children.
2. The variability in stools of normal children and those giving symptoms.
3. Comparison of effect of therapy (arsenic, antimony, etc.), in those patients with these varying symptoms with and without the parasite in the stools.

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**DOCTOR McCLENDON (Closing).**—This paper was presented as a report of our experience in a series of cases of twenty-two children in whom a giardia infestation was found. In these children there were no physical or laboratory findings to account for the symptoms presented other than the presence of giardia in the stools. It seems to us, therefore, rather more than a coincidence that these patients were not only benefited by the treatment, but were at the same time relieved of their giardia infestation, as subsequent stool examinations have shown. We appreciate the fact that enthusiasm may cause us to be strongly biased on the question of the pathogenicity of this organism. On one side of the question we have the opinion of Doctor Gunn, who has maintained for many years his belief in the nonpathogenicity of this organism, and on the other we have the attitude of equally keen observers who believe that the organism is pathogenic. Our experience with this series of twenty-two patients leads us to agree with this latter group and to regard giardia as one of the pathogenic types of protozoa.

## CHYLOTHORAX\*

### REPORT OF CASE

By ROSCOE G. VAN NUYS, M. D.  
Berkeley

DISCUSSION by Robert A. Glenn, M. D., Oakland; Robert S. Stone, M. D., San Francisco.

**U**NUSUAL pathology and conditions of obscure etiology always hold our interest. It has happened to most of us that we have never been alert to certain pathological changes until some author has called the same to our attention.

### REPORT OF CASE

Since the patient, Dr. H., is a physician, who was referred to us by Dr. W. H. Crane, his own story will be presented as he gave it.

Age, thirty-nine years. Birthplace, British West Indies.

Grandparents long-lived; cause of death unknown. Mother died in early thirties of heart disease; no knowledge of cancer, tuberculosis, or any specific disease in the family. Had measles in early childhood. Malaria first contracted in early childhood, with recovery. It recurred at twenty-one years of age while living in Panama. This impaired my health for a year or more and was accompanied by digestive disturbances at irregular intervals. Had varicocele on left side at age of fourteen, which seemed to have started soon after a blow while wrestling with another boy. This was operated upon several years later. Also had influenza. After the attack my ability for athletics was somewhat impaired. In the summer of 1922 while attending medical school I had after-

noon fever for six weeks. The possibility of tuberculosis was considered, but physical examination and x-ray did not reveal enough to justify a diagnosis of that disease. Because of malarial history, quinin was given. The slight fever left suddenly after six weeks and school work was continued without difficulty, though not without effort. Negative to gonorrhoea and syphilis. About nine months ago digestive disturbances were noticed. These grew steadily worse and failed to respond to ordinary dietetic measures. Marked gaseous distention added to this discomfort. One day a sudden sharp pain was felt in the region of the epigastrum which was akin to the pain patients describe when a hollow viscus is ruptured. After the initial intensity the pain subsided and the general condition felt improved for a while. After a month it was noticed that slight exertion, such as walking upstairs, made me quite tired, and running was out of the question. Finding that rest improved the condition, I took as much rest as possible. The development of a thrombotic hemorrhoid caused me to consult a physician, who found fluid in the pleural and peritoneal cavities. X-ray confirmed this. Several quarts of pleural fluid were aspirated on the first day, and two quarts the next morning. Withdrawal of the pleural fluid seemed to cause the abdominal fluid to disappear, and it again returned as the pleural fluid accumulated.

**Laboratory report** by Doctor Glenn (September 20, 1929): Pleural fluid examined for ameba, echinococcus and bacilli of tuberculosis. The specimen consists of very turbid, pinkish gray, limpid fluid. Fresh and stained smears show no pus cells nor bacteria, but many red blood cells settled to the bottom. A small portion of this was treated with ether and shaken. The fluid promptly cleared and became an amber solution. A drop of fluid on a slide was stained with Sudan three and clear, stained fat droplets appeared.

**Other examinations:** The Wassermann was negative; the urine was negative. Blood count: white blood cells, 7300; small lymphocytes, 31; large, 6; polymorphonuclears, 61; transitionals, 2; hemoglobin, 76.

**Conclusion:** True chylous effusion, due either to trauma or, more likely, to pressure on the thoracic duct by a tumor mass.

### ETIOLOGY

Chyle is lymph derived from the walls of the alimentary tract. Chylothorax is a condition in which the pleural cavity contains chyle. This condition results from a rupture of the thoracic duct or its radicals, or from a pathological condition in their walls, whereby the contents may be transuded into the pleural cavity. Trauma in some form is the most frequent cause. This often occurs in the upper part of the duct near its junction with the subclavian vein. Accidents of surgery in the lower cervical region, gun-shot wounds, or self-inflicted wounds may bring about this condition. Watts describes the case of a demented man who ran a knife into his suprasternal notch. Trauma of the lower portions of the duct may be caused by fracture of the vertebrae and ribs. Hypertrophic spurs may, during an accident, injure the duct, especially when it has lost its elasticity by some pathology about it. Such a case was described by Lindenberg of Germany. The next of importance are newgrowths, carci-

\* Read before the Radiology Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

noma especially; tuberculosis, or other enlargements of the lymph nodes, such as lymphosarcoma; thrombosis of the left subclavian vein; secondary growths in the duct itself; perforating lymphangitis; aneurysm of the duct itself and in one case aneurysm of the aorta; mitral disease; and cirrhosis of the liver, as referred to by Nichols. Warthin tells us that thrombosis of the duct itself is the complicating cause. This thrombosis may be due to causes already referred to or to Filariæ.

#### SYMPTOMS

Dyspnea and orthopnea, cough, pain in the epigastrium in some, and pain in the shoulders and back in others. The shifting of the symptoms is described in one case, making the clinician think of everything from filariæ to aneurysm. Vomiting of large amounts of chylous fluid was described by Lyter, who says this is the only case in the literature. Progressive weakness and loss of weight are common.

#### DIAGNOSIS

Most cases will now be picked up as was ours—by x-ray and exploratory puncture. The usual physical signs of fluid in the pleural cavity are present. Edema of the extremities is often present, and in our case there were dilated veins in the abdominal wall. Careful differentiation between true chyle and pseudochyle must be made. With true chyle there must be a lesion of the thoracic duct. Pseudochyle is not due to fat, but to a lecithin-globulin complex held in suspension by the inorganic salts present (Wallis and Scholberg). Some also describe a chyloform fluid due to fatty degeneration of cellular elements. Elliott warns against assuming that the milky fluid is pus. There is no odor to the fluid and it will remain in a container for weeks without becoming putrid. The rate with which the pleural cavity fills is important. The normal flow of lymph from the thoracic duct is from 130 to 195 cubic centimeters per hour (over three liters in twenty-four hours).

#### INCIDENCE

In making a diagnosis the incidence must be borne in mind. Lewin in 1916 was able to find only fifty-one cases of true chylothorax since the time of Bartolet, who is said to have described the first case in 1633. In 1918 Funk added three cases and Watts found three more, making fifty-eight cases up to April 5, 1921. Stewart and Linner in 1926 report a case of a new-born infant in which chylothorax began on the fourth day. Lyter in 1926 reports a case of a farmer who had a carcinomatous mass in the epigastrium obstructing the thoracic duct. Andrews, an ex-resident of the Mayo Clinic, reports a case which came under his observation in Lincoln, Nebraska—a man who had been pinned under an auto. Lindenberg of Germany reports a case of

a man who was caught between two coal cars. Paitre, in France, cites a case of a left-sided chylothorax.

The case here reported, then, is the sixty-sixth, so far as the writer can judge from the sources so far available.

Chyloascites is less rare. Watts says that the peritoneum is involved twice as often as the pleura. When the writer looked up the literature, he found most of the references dated before 1920, and he felt that something was wrong—the war most surely caused many cases because of trauma. The writer found the explanation in the remark that because of the protected position of the thoracic duct and its location near the great vessels, a bullet wound would also cause fatal hemorrhage. Elliott reports two cases from the war, after examination of one thousand chest wound records.

#### PROGNOSIS

Grave Zesas, in his review of cases, gives a 50 per cent mortality; Lindenberg of Germany gives more hope than this in the traumatic types and puts the mortality at 10 per cent. In most of the case histories which were reviewed death ensued in two or three weeks.

#### TREATMENT

The effort seems to have been in most of the patients to remove the chyle as fast as it formed, perhaps more often than the relief of dyspnea made necessary. In our patient, Doctor Crane and his consultant, Doctor McVey, decided not to withdraw the fluid unless imperative. If chyle is constantly aspirated death soon comes from starvation and inanition before adequate collateral chylous circulation can be formed. Lindenberg confirms this policy for traumatic cases by stating that the therapeutic intention should be to make the loss of chyle as little as possible—only when vital. Every puncture is a damaging factor as regards healing, since restored negative pressure caused by aspiration sucks at the wound and makes healing impossible. Lewin and also Hammessahr of Germany both state that, as a result of negative pressure in the chest, chyle can escape into the pleura from the mediastinum through the normal intercellular spaces between the epithelial cells. Surgery, it seems, is highly impracticable in most cases. In our patient no history of trauma was found, and by gastro-intestinal and chest x-rays no definite etiology for the condition was noted. Fluid was removed five times—during September, ten quarts; October, three quarts; December, four quarts. On December 19, on the suggestion of Doctor Crane, the patient was empirically given a treatment with high voltage x-ray in the region of the lower mediastinum. He was instructed to return; but the treatment so upset his breathing and his stomach that for two or three weeks he was worse. Since that

time, however, he has markedly improved; he looks better, has gained in weight, eats well, and breathes more freely. Doctor Crane and I are inclined to believe that the treatment helped him, even though the reaction was intense. A recent examination of blood smears, collected by the patient at night, and examined by Doctor Glenn, reveal no Filariae. Films made February 18 show some lowering of the fluid level in the general pleural cavity, although the mediastinal shadow remains as before. Films made April 2 and April 22 show lowering of the general pleural effusion and decrease in the mediastinal shadow.

The writer wishes to thank Doctor Crane of Berkeley for the courtesy of letting him report this case. Dr. Charles McVey and Doctor Glenn of Oakland also gave valuable assistance.

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#### DISCUSSION

**ROBERT A. GLENN, M. D.** (The Samuel Merritt Hospital, Oakland).—One's first impression on observing this fluid was its apparent intensely purulent, hemorrhagic nature, yet it was free-flowing and exhibited no sedimentation. Our immediate suspicion of chylous effusion was made certain by microscopic and chemical study, as stated in the paper. Subsequent observations of fluid from the same case verified the original diagnosis. In the absence of any history of trauma one is inclined to believe in the probability of pressure exerted on the thoracic duct causing the effusion of chyle. The fact that one exposure to deep x-ray therapy was followed by an intense general reaction and a subsidence of the fluid level seems to support the opinion of the presence of a tumor, probably lymphomatous in nature, pressing on the duct. However, the history given in the paper of digestive disturbances, gaseous distention, etc., followed by a sudden onset of excruciating pain in the region of the epigastrium may indicate some acute disaster of an entirely different nature.

We have had the opportunity to observe this patient occasionally during the past year and he reports himself in excellent condition, without any respiratory distress, and attending his medical practice as usual.

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**ROBERT S. STONE, M. D.** (University of California Hospital, San Francisco).—Doctor Van Nuys has presented to us a very unusual case in a very interesting manner. Naturally, from the fact that he could find only sixty-six cases reported few, if any of us, will have had personal experience with this condition. It is therefore, of especial value to us to have Doctor Van Nuys share his experience with us.

The only point that I can make in a discussion of this report is to call the attention of the medical profession to the necessity for close coöperation between the roentgenologist and the physician referring the patient. Undoubtedly the x-ray appearance of this chest would suggest nothing more than an ordinary case of pleural effusion, but the roentgenologist being a trained physician was able, because of his medical training, to help interpret the x-ray findings in the light of the clinical findings. The day has gone by when the x-ray film should be used as a puzzle picture to the roentgenologist, put up by the physician with the spirit of tell me what is the matter with the patient from the film. This case of chylothorax reported by Doctor Van Nuys is an excellent example of just this point.

## THE LURE OF MEDICAL HISTORY

### GALEN: GREEK, MEDIEVALIST AND MODERN\*

#### PART I

By SANFORD V. LARKEY, M. D.  
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WHILE Galen's reputation rests largely on the nature of his authority in the Middle Ages and the resultant action to it brought about by the discoveries of Vesalius and Harvey, it should be pointed out that there are certain phases of his work, especially in experimental physiology, which bring him into much closer accord with modern science than is usually thought. I shall try to point out the philosophical trend of his thinking which so profoundly influenced medieval scholars, and, in contrast, will describe some of his experiments and his treatment of patients.

Galen was born in Pergamos, Asia Minor, in about 131 A. D., so this year is the eighteen hundredth anniversary of his birth. He was essentially Greek in his mode of thought, this in contrast to the more practical Romans, whose scientific achievements were best exemplified in their great aqueducts, baths, sewers, etc. His father, Nikon, an eminent architect, gave his son an excellent education, philosophical in nature. After the god Aesculapius had appeared to his father in a dream, he decided to study medicine and traveled widely. Among other places he visited Corinth and Alexandria, the latter the great medical center of his time, where there was a knowledge of human dissection. His own later work was done entirely on animals, and this accounts for many errors in his descriptions.

After serving as physician to the gladiators in his home city, he came to Rome where he achieved a great reputation, but due to the jealousy of his fellow practitioners he was forced to flee for his life. However, the emperor Marcus Aurelius recalled him to be court physician and tutor to his son Commodus. After a life of tremendous activity and amazing literary productivity, he died in 201.

Galen's particular genius consisted in correctly appreciating the essential features of his scientific inheritance. In a welter of conflicting ideas and theories, he based his medicine on Hippocrates and his biology on Aristotle. Thus he brought together the best elements in Greek medicine, an essential step in scientific progress. This systematization carried great weight in the Middle Ages, but it took along with it many fanciful speculations, which were considered equally authoritative, and which were not tested by experiment. In fact the method of experimental verification, urged but not always practiced by Aristotle and

\* From the department of medical history and bibliography, University of California Medical School.

• Read before the Alameda County Medical Society, February 16, 1931.

Galen, seems to have been forgotten and some of Galen's best work was overlooked.

Aristotle had said "Nature makes nothing in vain," and much of Galen's work is colored by this teleological point of view. He attempts to show the purposeful design of an omniscient creator. This is well illustrated in the introduction to his "The Use of Parts."

"This work is a veritable hymn which I compose to the power that made us. And I hold it to be true piety, not that I should sacrifice to him innumerable hecatombs of oxen, nor burn abundance of myrrh and cassia, but that I should first myself realize, and then show to others how wise he is, how powerful, and how good. For his wish to bring the whole cosmos into order and to debar no one from its benefits—this I hold a proof of his absolute goodness; for this, then, let us praise him as good."

"The foot is a small and modest portion of the animal—who will deny it? The sun is great; it is finer than anything else in the universe; this, too, we know. Consider, however, this: Where ought the sun to have been stationed in all the universe, and where the foot in the animal? The sun ought to have been placed midmost among the wandering stars in the universe, and the foot lowest of all things in the body."<sup>1</sup>

It can easily be seen how acceptable this must have been to medieval theologians. It all fitted in so perfectly with the ideas of Catholic Christianity.\*

Another speculation which had a great influence was his doctrine of the "spirits," or the function of the blood. Food was digested in the stomach and the chyle carried to the liver. Here it was "concocted" or elaborated into the "Natural Spirits." The blood containing this ebbed and flowed in the venous system and served for the nourishment of the tissues. It also entered the right side of the heart and was carried to the lungs, the purpose of which was to cool the blood and rid it of waste vapors. There was no conception of a circulation through the lungs. Some of the inspired air, the "pneuma," was carried to the left side of the heart, a small portion of the blood in the right ventricle seeped through minute orifices in the septum into the left ventricle. Here it became rarefied and elaborated by contact with the "pneuma" into the "vital spirits." This ebbed and flowed in the arterial system and was necessary for the life of the tissues. This arterial blood going to the brain was again converted into a third, the "animal spirits," which flowed in the nerves and which were necessary for movement. This was the physiological system which dominated until the time of Servetus and Harvey.

#### APPENDIX

Since Galen's great teleological work, "The Use of Parts," has never been translated into English, the following a translation of the first five chapters of this from Daremberg's French edition may be interesting.

\* See, also, the appendix.



Fig. 1.—The title page of the Junta edition of Galen, 1556. (From a copy owned by Dr. Chauncey Leake.)

"The Use of Parts"  
Translated from the French of Charles  
Daremberg by Geraldine G. Larkey

#### Chapter I

It is said that every animal is a *unit* because it appears to have a certain real circumscription and because it has no junction with other animals. In the same way it is said that each part of the animal, for example, the eye, the nose, the tongue, the hair is a *unit*, provided it also appears to have real circumscription. If these parts were not attached on several sides to that which they bordered, and if, on the contrary, they were completely isolated, then they would not be *parts* at all, but simply *units*. So that any body which has not a real circumscription, but which also is not united on all sides to that which surrounds it, is called a *part*. If this is true, there would be many parts in animals, some larger, some smaller, and finally some which are absolutely indivisible into other kinds.

#### Chapter II

The use of all these parts is dependent on the soul, for the body is the instrument of the soul. Moreover, the same parts differ widely from each other among the different animals because the souls themselves differ. Thus there are strong souls, there are cowardly, savage and subdued souls; others, so to speak, are civilized and capa-

ble of directing various affairs; others have solitary tastes. Among all, then, the body is accommodated to the habits and to the faculties of the soul. In the case of the horse the body is provided with strong hoofs and a mane, for it is a swift, faithful animal, and not without courage. With the lion, a valiant and bold animal, the body derives its force from teeth and claws. It is the same with the bull and wild boar; with the former, horns, with the latter prominent teeth (defense) are the natural weapons. With the stag and the hare (cowardly animals), the body is able to run quickly, but is absolutely bare and disarmed. It is in fact appropriate, it seems to me, to give speed to cowardly animals and weapons to brave animals. Thus nature has neither armed the cowardly nor disarmed the courageous. To man, animal gifted with wisdom and the only divine being among those which live on earth, she has given for his entire defensive weapon, the hands. An instrument necessary to carry out every kind of industry and no less useful in times of peace than in times of war. There was no need, then, of giving a natural horn to this one, which at its will could construct with hands an instrument better than a horn; for the sword and the lance are both better and more suitable weapons for cutting than any kind of hoof. Moreover, with the horn and hoof one can do nothing without getting close to one's adversary, while the weapons of man are as effective from a distance as close to; the javelin and the arrow better than the horn, stone and wood better than the hoof. But the lion is more swift than

man. What does that matter since man, by his wisdom and his hands, has mastered the horse, which is swifter than the lion and which he uses in fleeing from or following this animal. From the height of this horse on which he is mounted man can strike the lion which is on foot. Thus man is neither bare, nor without weapons, nor easily vulnerable, nor without swiftness, but where he so wishes, a cuirass of iron becomes for him a means of protection more invulnerable than any kind of skin. He can also have shoes, clothes and weapons of every kind. It is not only his armor, but also his horse, his wall and his towers which shelter man. If he had a horn or any other kind of defensive weapon naturally attached to his two hands, he would not be able to use his hands either for building houses and towers or for constructing a lance or an armor, or any other similar article. With his hands man weaves a coat, interlaces the mesh of a net, completes a weir, a thread, a network. Consequently he is master not only of the animals which live on land, but of those which live in the sea or in the air. Such is the weapon which man finds in his hands to defend himself. But man, made for peace as well as for war, uses his hands for writing laws, raising altars and statues to the gods, constructing a ship, fashioning a flute, a lyre, making a knife, a pair of tongs, producing instruments for all the arts. In his writings he leaves memoirs on the theoretical side of these arts so that, thanks to written works and the use of the hands, you can still be in contact with Plato, Aristotle, Hippocrates, and the other ancients.

### Chapter III

Thus man is the wisest of all animals. Thus the hands are an instrument suitable to a wise being, for man is not the wisest of animals because he has hands, as Anaxagoras claimed, but he has hands because he is the wisest, as Aristotle (who judges very discerningly) set forth. In fact it is not by his hands, but by his reason that man has learned the arts. The hands are an instrument, just as the lyre is an instrument for the musician, and the tongs for the blacksmith. However, the lyre has not created the musician nor the tongs the blacksmith, but each is an artist because of the intelligence with which he has been endowed, and he cannot exercise his art without instruments. In the same way every soul is endowed, by virtue of its essence, with certain faculties. But it is impossible for it to carry out that to which nature has destined it, if it is deprived of instruments. It is obviously seen in observing new-born animals who try to act before their parts are entirely formed, that the parts of the body do not excite the soul to be cowardly, courageous, or intelligent. Thus I have often seen a calf hit about with its head before its horns are developed; a colt kick, although its hoofs are still soft, and a tiny pig defend itself with its snout, destitute of its big teeth. Finally, a little dog tries to chew with its teeth still tender, for every animal has in it, without having been taught, the feeling of the faculties of his soul and



Fig. 2.—Æsculapius appearing in a dream to Galen's Father.

of the power of the parts of his body. Why, then, does the little pig, being able to chew with his teeth, not use them in combat while he tries instead to use what he has not yet got? How can it be said that animals learn from the parts themselves the manner of using them since before possessing these parts they already know the destination of them? Take, then, three eggs, one of an eagle, one of a duck, one of a snake. Warm them moderately yourself and break the shell. You will see among the animals which you have hatched that two will try to use their wings before being able to fly, that the other will crawl, although it is still soft and powerless to do it. And if, after having raised them in the same house, you carry them into the open air and give them their liberty, the eagle will rise into the air, the duck will fly to some mire, and the snake will hide itself in the ground. Finally, I think it is not because of having been taught that the eagle will hunt, the duck will swim, and the snake will cower in a hole for, following the word of Hippocrates, "The natures of animals do not receive instruction." From which it seems to me, moreover, that animals exercise certain arts, more by instinct than by reason. Thus one sees the bees construct hives, the ants dig themselves sort of cellars and underground passages, and the spiders weave and spin their webs, and without, I imagine, having had any masters.

#### Chapter IV

Man, in the same way that he has a body deprived of weapons, has also a soul destitute of skill. That is why he has been given hands and reason to compensate for the bareness of his body and the absence of skill in his soul. Using, then, his hands and his reason, he arms and protects his body in every way, he adorns his soul with all the arts, for, if he had possessed a natural weapon, he would still have had only that, and in the same way, if he had known any art naturally, he would not possess others. As it was better to employ all the weapons and exercise all the arts, man did not receive any from nature. Aristotle has well said, that the hand in some ways is a positive instrument which takes the place of other instruments. By imitating Aristotle, we could also very well contend that reason is a positive art, which takes the place of other arts. In fact, as the hand, not being any of the particular instruments, takes the place of all the instruments (since it can very well construct them all), so the reason, which is not any particular art, since it is capable of receiving them all, would be an art which takes the place of arts. Man, then, being of all the animals the only one which possesses in his soul an art which takes the place of arts, consequently enjoys in his body an instrument which takes the place of instruments.

#### Chapter V

Let us examine at first this part of man (that is to say, the hand) and let us see not only if it is simply useful, or if it is suited to an animal endowed with wisdom, but if it is, in all its de-

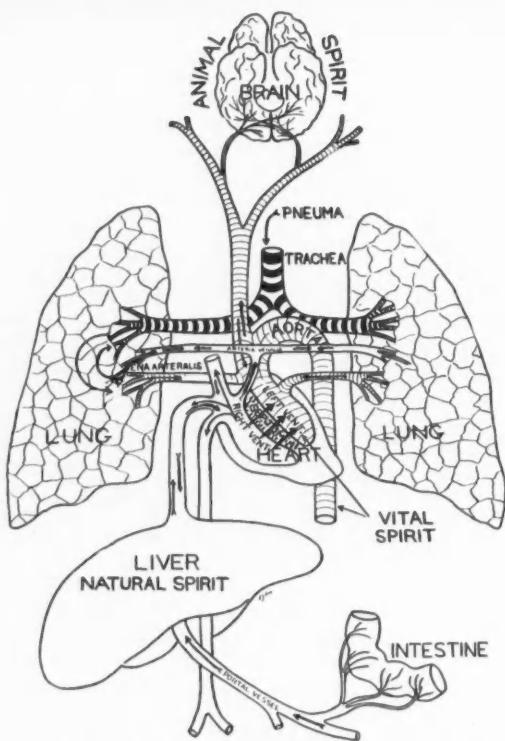


Fig. 3.—A diagram showing Galen's theory of the "spirits."

tails, a structure such as could not be improved upon if it were constructed in some other way. The first and most important requirement which an instrument of prehension should fulfill, in order to be a perfect construction, is to always be able to pick up easily any objects that man needs to move, whatever form or whatever size it might be. Is it, then, more advantageous for the hand to be divided into parts of diverse forms, or for it to be made of a single piece? There is certainly no need of long explanations to show that the hand, if it were undivided, could not touch the bodies with which it would come in contact, except on a surface equal to its actual width. But, divided into several parts, it can easily embrace objects much more voluminous than itself, and can catch perfectly the smaller objects. When it seizes voluminous articles it increases its span by stretching the fingers, and with small things it does not try to take them with the whole hand, for these objects would escape it, but it suffices to use the ends of two fingers. The hand, then, is the most perfect structure with which to seize firmly small things as well as large. And finally, it is very fortunate that the hand was divided into parts of divers form in order to grasp articles of various shapes. Now, in order to accomplish this end, the hand is evidently the best constructed of all the instruments of prehension. For spherical objects, it can put itself in a round shape and embrace them circularly on all sides. With the same certainty it can seize flat bodies, and those which are

hollow. In the latter case it adapts itself to all the forms, since all the forms result from a combination of three kinds of lines—convex, concave, or straight. Since many bodies are too large to allow one hand to be sufficient, nature has made one the auxiliary of the other, in such a way that both, seizing the voluminous object by two sides, do not leave the task to one hand, which would be very difficult. The hands, consequently, have been turned opposite to each other, for they were made for each other, and they have been constructed absolutely alike. That was a very suitable thing for organs which must act in the same way. After you have considered the largest objects man is called upon to move with his two hands, such as wood and stone, turn your thoughts immediately toward the tiniest objects, such as a grain of millet, the thinnest of thorns, a hair; then think of the multitudinous degrees of volume between the largest and the smallest, and reflect on all that. You will find that man manages all these things so well, that it will seem to you that the hands have been made expressly for each one of these articles separately. In fact, with small objects, one seizes them with the ends of two fingers, the thumb and the index. Objects a little larger are taken with the same two fingers, but not with the ends of them. With objects still more voluminous three fingers are used, the thumb, the index, and the middle. For those which are still larger, four fingers are put to work, then the five, then the whole hand. Then the second hand is added for objects still more voluminous. The hand could not fulfill any of these tasks were it not divided into parts of divers form. But it does not suffice that the hand should simply be divided into fingers: in fact, of what use would that be, if one of the five fingers had not been opposite the four others as it is, and if all had been placed in the same row beside each other? Is it not evident that the number of the fingers would become useless? For, in order to be firmly held, every body must be seized around all sides, or at least by two opposite points. This advantage might have been lost if the five fingers had been ranged on the same line with each other; but in the actual state of things it is preserved, one of the fingers being able to be opposite the others, for this finger is placed and moves in such a way that by means of a very limited movement of rotation it is able to act in accord with the other fingers to which it is opposed. As it was best that the hands should be able to fulfill the functions which they now fulfill, nature has given them a structure which renders them apt to these operations.

University of California Medical School.

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## MASTERS IN MEDICINE

### WILLIAM HENRY WELCH AT EIGHTY

**W**ILLIAM HENRY WELCH AT EIGHTY" is the title of a volume published by the Milbank Memorial Fund of New York, in commemoration of the celebration of the eightieth birthday of Dr. William Henry Welch of Johns Hopkins University.

From this memorial record of celebrations have been taken excerpts, which here follow. If there be a member of the medical profession in the United States to whom the honor "dean of the medical profession of America" could be most aptly applied, the man selected would in all probability be Welch of Johns Hopkins. The excerpts here given should, therefore, be of interest to all who have not been fortunate enough to have access to the complete volume of memorial addresses.

#### FROM THE FOREWORD BY JOHN A. KINGSBURY

For his fine courage and rare ability to pursue truth into its innermost fastness, his broad vision of scientific conquests for the practical benefit of humanity, his warm zeal for discovering and developing the strength of others crusading for health, his charming genius for friendship, and his modesty, marked as his greatness, Dr. William Henry Welch has long been the recipient of cumulating honors and felicitations. When he reached the age of eighty, on April 8, 1930, it was but natural that the legions of his followers, colleagues, personal friends, and unknown admirers should pay their tributes more abundantly than ever before.

Certain associates and friends of Doctor Welch had seen in advance that the occasion of his eightieth birthday would demand some organization for the acclaim which was sure to arise from all sides. . . . The coöperation of Doctor Welch himself had to be secured, in order to obtain necessary information, and to arrange for his presence at certain of the gatherings. With characteristic modesty he contended that he was merely a figure in the great cause of modern medicine, which had been advanced by many leaders working together. The committee turned the contention back upon Doctor Welch and induced him to accept the tributes as a representative of that movement.

This book is published as a memorial record, even though necessarily incomplete, of the celebrations in honor of the eightieth birthday of Doctor Welch. . . .

. . . In publishing this volume for the Executive Committee, which served in organizing the celebrations, the Milbank Memorial Fund honors Doctor Welch, who is the chairman of its Advisory Council, and at the same time aims to perpetuate an ideal in the domain of its principal interest, public health, where, as President Hoover said, "Doctor Welch is our greatest statesman."

#### FROM THE DEDICATORY PAGE OF THE VOLUME

### WILLIAM HENRY WELCH

*To have stepped, in the prime of life, into a position of acknowledged intellectual leadership in the profession of his choice; to have occupied that position, albeit unconsciously, for those forty years which have seen the most rapid strides in medical progress of all time; to have had such influence in the furtherance of the medical sciences in this country as to turn the tide of students seeking opportunities for higher education from the old world to the new; to have been as ready in countless unrecorded ways to share his time and thought with those who were inconspicuous as with those who sat in high places; to have been no less universally respected for his great learning than beloved for his personal*

*charm and companionability; to have stood knee-deep in honours unsought and to have remained seemingly unaware of them; to have rounded out with distinction two successive university positions and, with enthusiasm undimmed, to be now well launched on a third which he is no less certain to adorn—to have done so much, in so many ways, for so many years, and to have aroused no shadow of envy or enmity on the way, betokens not only unselfishness of purpose, but that fineness of character which always has been and always will be an inspiration to mankind.*

FROM THE BRIEF ACCOUNT OF THE CELEBRATIONS  
AROUND THE WORLD

The focus and the point of radiation for the celebrations around the world in honor of the eightieth birthday of Dr. William Henry Welch, was the meeting in Washington, D. C., on April 8, 1930. Here were assembled sixteen hundred of his friends to see him and to witness the ceremonies in which President Hoover took eminent part. The heralding of the event in the press of America and other nations had turned the attention of a great public to Doctor Welch and those paying distinguished tribute in Washington. Congratulatory messages poured in from friends and other admirers who could not attend. The program, beginning at noon and lasting one hour, was broadcast throughout the country by the two leading broadcasting companies and to distant lands from two short-wave stations.

A unique feature in the linking of many celebrations by radio was the simultaneous presentation of drypoint portraits of Doctor Welch to about fifty institutions in which he is especially interested. . . .

FROM THE ACCOUNT OF THE CEREMONIES IN  
WASHINGTON

*The following is taken from the address of Livingston Farrand, chairman of the meeting:*

It is a very happy occasion that brings us together, that of celebrating the eightieth birthday of William Henry Welch, but it is a very bewildering task that is offered us even to outline within the space of one hour the great service of that extraordinary man. Certainly it is not for me to attempt to indicate, except in one or two points, the contributions which Doctor Welch has made.

A great teacher, a constructive educator, a wise counselor, a leader of public opinion—in all these fields of activity he has left his impress.

And his has been a leadership which has meant much in the application of those discoveries of medical science to which he himself has contributed so well. It has meant so much for the improvement of the conditions of mankind. . . .

\* \* \*

*From the address of Simon Flexner, chairman of the Executive Committee:*

As a pupil, in the words of your chairman, as a beneficiary of Doctor Welch, in honoring whom today on his eightieth birthday we honor ourselves more, may I speak for those almost numberless pupils, direct and indirect, whose scientific and professional lives he has influenced, to pay him the tribute he has so well earned in the more than fifty years of service he has given to medicine in its broadest aspects?

. . . There is one great historical figure in the Renaissance with whom perhaps it is not only permissible, but possible to compare Doctor Welch, and that figure is Leonardo da Vinci, a man whose interests in theoretical science and whose pioneer contributions to practical mechanics and other branches of applied science, whose interest in the arts, surpass those of anyone before him or anyone since his time. One must go back to that individual to get a measure with which to compare our great, distinguished guest of today. . . .



WILLIAM HENRY WELCH

From a drypoint portrait by Alfred Hutty, made especially for the celebration of the eightieth birthday of Doctor Welch, who received the first impression at the Washington ceremonies. About fifty other impressions were presented simultaneously to institutions in many countries.

*From the address of Herbert Hoover, President of the United States:*

The many years that I have been honored with Doctor Welch's friendship make it a privilege to join in this day of tribute to him by his friends and by the great scientific societies of our country and of the whole world. Doctor Welch has reached his eightieth year and a whole nation joins in good wishes to him. . . .

. . . Our age is marked by two tendencies, the democratic and the scientific. In Doctor Welch and his work we find an expression of the best in both tendencies. He not only represents the spirit of pure science, but constantly sees and seizes opportunities to direct its results into the service of human kind. . . .

. . . Doctor Welch has happily combined in his character and intellect the love of truth and the patient experimental habit of the pure scientist, with the ingenuity of the inventor and the organizing vision and energy of the promoter of sound enterprise—and combines all these things with a worldly wisdom and gracious charm that have made him a leader amongst men. . . .

. . . I know that I express the affection of our countrymen and the esteem of his profession in every country when I convey to him their wishes for many years of continued happiness. . . .

FROM THE REMARKS AT THE CEREMONIES IN WASHINGTON  
BY WILLIAM HENRY WELCH HIMSELF

I intended to throw away my manuscript, but I knew I could hardly trust myself to speak without it. I must speak in my own person and not in that of the idealized figure which has been presented to you.

It is quite beyond my power of words to express the thoughts and the feelings of gratitude which this

wonderful occasion has aroused in me. Did I accept merely as a personal tribute these words of praise and this manifestation of appreciation and good will marked by this large and distinguished gathering and by meetings elsewhere, I should be overpowered with a sense of unreality depriving me of utterance, but I shall assume, as I feel that I am justified in doing, that by virtue of certain pioneering work and through over a half-century of service, I stand here to represent an army of teachers, investigators, pupils, associates, and colleagues, whose work and contributions during this period have advanced the science and art of medicine and public health to the eminent position which they now hold in this country. . . .

. . . As my immediate and, doubtless, final professional interest is on the humanistic side of medicine, I may, in closing, be permitted to emphasize the attractions and importance of studies in the history of medicine and of science. We physicians apply the word "humanism" to a period and to a spirit which released the mind from thrall to authority and contributed mightily not merely to the study of antiquity, but to the study of nature and of man, leading logically and rapidly to the cultivation of experimental science, between which and humanism as we understand and use the word, there is no incompatibility whatever.

While nothing can be more hazardous than to attempt to predict the directions of future discovery and progress in the biological and medical sciences, it requires no prophetic gift to be confident that with the widening of the boundaries of knowledge will come increased power to relieve human suffering, to control disease, to improve health and thereby add to the sum of human happiness and well-being. Your presence on this occasion and the widespread recognition, so conspicuously manifested, of the value of services rendered in the field of medical education and medical science are an encouragement to teachers and workers for which I am profoundly grateful and which accentuates the note of hopefulness which I have endeavored to sound.

## CLINICAL NOTES AND CASE REPORTS

### INFECTION WITH CRAIGIA\*

#### REPORT OF CASE

By DOROTHY ANN KOCH  
San Francisco

SINCE so much doubt has been cast upon the authenticity of the genus *Craigia*, we feel that every case should be recorded. Craig's<sup>1</sup> (1914) original organism and those of Barlow<sup>2</sup> (1915) have not been rediscovered, but Wenyon<sup>3</sup> (1926) states that there is no doubt that Kofoid and Swezy<sup>4</sup> have discovered a small flagellated ameba rarely found in human stools, and called by them *Craigia*. In Wenyon's<sup>3</sup> opinion this uniflagellated ameba may belong to the genus *Spiromonas* or be similar to the coprozoic *Oikomonas*. Kofoid and Swezy<sup>4</sup> (1921b) describe two species, *Craigia hominis* (Craig 1906) and *Craigia migrans* (Barlow 1915),<sup>2</sup> the latter being most commonly found. This species has in its life cycle (1) a swarmer or flagellate stage, (2) a motile ameboid stage, and (3) an encysted

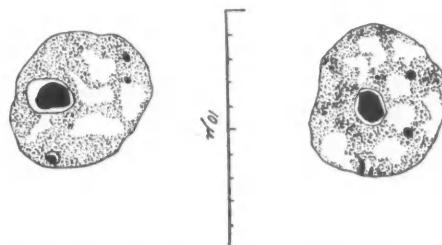


Fig. 1.—*Craigia* x 3600. Camera lucida drawings from slides stained with iron hematoxylin (Heidenhains).

stage which gives rise to swarmer flagellates. Cysts show a paradesmose at nuclear division, a condition only found in the flagellates. The flagellate phase is recognized at once by the single flagellum, the blepharoplast which appears as a small granule in the cytoplasm, occasionally a rhizoplast and a large nucleus with deeply staining karyosome. The spherical cysts can be distinguished from those of other amoebae by the presence of the blepharoplast and the vacuolated cytoplasm which has a "smooth" rather than granular appearance. The nuclear membrane is very distinct, and the karyosome, although almost always a spherical mass, nearly fills the whole nucleus.

During routine examination of feces, we have encountered an organism (Fig. 1) corresponding in every way to that described by Kofoid and Swezy. This diagnosis was made from slides fixed in Schaudinn's fluid and stained with Haidenhain's iron hematoxylin. These showed organisms with the typical vacuolated cytoplasm, and one large nucleus with a deeply staining karyosome. Many forms showed the blepharoplast. The organism averaged 6.6 microns in diameter, a few being smaller.

No active flagellates, easily recognized by the single flagellum, were seen, and the fact that in seven subsequent examinations no protozoa of any kind were found, bears out the statement of Kofoid and Swezy that this organism is extremely erratic in its appearance in the stool.

Craig<sup>1</sup> (1914) claims no pathogenicity, except diarrhea which cleared with treatment. Barlow<sup>2</sup> (1915) attributes chronic diarrhea with hepatic abscess as a complicating symptom. Kofoid and Swezy<sup>4</sup> have found the organism in cases of chronic diarrhea. Distribution of cases so far recorded is as follows: Philippines 9, United States 5, Honduras 60, Shanghai 4, Mexico 1, India, 1, Armenia 1. The case here reported from the service of Dr. A. C. Reed is of interest because of the complete lack of gastro-intestinal symptoms.

#### REPORT OF CASE

Miss G., female, white, age sixty-one, a nurse and teacher, entered the hospital on February 3, 1930, complaining of pain "under breasts" and ribs, and a productive cough.

**Residence.**—Richmond, Virginia, 0-12; England, Germany, and Mediterranean, 12-18; Philadelphia, 18-24; China and Japan, 24-31; Sydney, Honolulu, Samoa, and United States, 31-61.

\* From the Pacific Institute of Tropical Medicine, University of California, San Francisco.

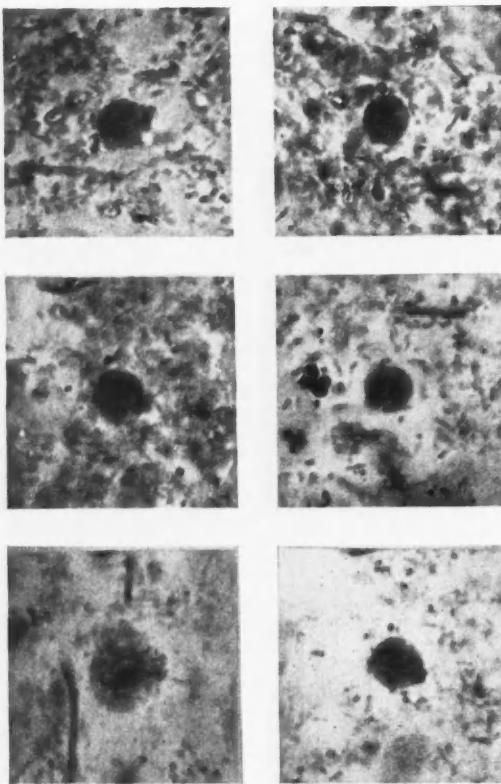


Fig. 2.—Craigia. Photographs from slides stained with iron hematoxylin.

**Diseases.**—Typhoid, aet. 21; exposure to tuberculosis in tropics; "influenza" last fall; colds frequently since.

**Symptoms.**—Headaches, "eyes bad," glasses for reading; occasional vertigo; no tonsillitis; occasional precordial pain; no dyspnea on effort; three pillows at night. Two months before admission the patient fell downstairs, injuring her left side, shoulder, and left eye. She developed a "cold" following this, which became progressively worse until January 9, when chest pain, cough—productive with rusty sputum and fever and weakness—became so marked that she went to bed and has been in bed since, treating herself as best she could in a hotel room. She has lost about twelve pounds in weight, and cough, fever, chest pain, weakness, and occasional vomiting persist to the present.

**General Condition.**—Temperature, 100; pulse, 100, regular; blood pressure, 145/70; respirations 30, and regular; poorly nourished; weight, 120 pounds; height, five feet five inches. She was very restless, coughing continually, raising sputum, and complaining of pain in left chest. The lungs showed pleuropneumonia, followed by bronchitis. The abdomen was not remarkable. There were no neurologic symptoms.

**Diagnosis.**—Bronchopneumonia; pleurisy; secondary anemia. X-ray of chest showed evidences of pleurisy with chronic bronchitis and enlarged hilus glands.

**Laboratory Reports.**—Urine: Clear, straw color, alkaline, specific gravity 1010; no albumin, no sugar, no casts, occasional pus cells, no blood. Sputum: Many pus cells, staphylococci, few short chains of streptococci, no acid-fast bacilli. Blood: Wassermann negative; hemoglobin, 75 per cent; erythrocytes, 4,180,000; leukocytes, 20,600; large lymphocytes, 8 per cent; transitional, 4 per cent; polynuclear neutrophils, 86

per cent. Feces: Neutral; occult blood negative; small amount of mucus; food well digested; few vegetable cells; few crystals; occasional muscle fibers; *Craigia* (ameboid stage).

Patient made a complete recovery, with no gastrointestinal symptoms at any time. Seven subsequent fecal examinations during hospitalization failed to reveal the presence of *Craigia*.

Hooper Foundation, University of California.

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#### DERMATITIS VENENATA DUE TO WIGANDIA CARACASANA

A HITHERTO UNRECOGNIZED CAUSE

#### REPORT OF CASE

By NELSON PAUL ANDERSON, M. D.  
AND  
SAMUEL AYRES, JR., M. D.  
Los Angeles

THE occurrence of dermatitis venenata, due to such plants as poison ivy (*Rhus toxicodendron*), poison oak (*Rhus diversiloba*) and other members of the *Rhus* family, as well as that due to the primrose, is too well known to require comment. A large number of both rare and common plants have been incriminated in the production of dermatitis venenata.<sup>1</sup>

In reviewing the literature the authors have been unable to find any reference to a case of dermatitis venenata due to *Wigandia caracasana*, a fairly common tropical and subtropical plant which has been introduced into southern California and rather widely used as an ornamental shrub. Pardo-Castello<sup>2</sup> does not mention this plant in his list of tropical plants producing dermatitis venenata; nor is it mentioned in Weber's<sup>3</sup> excellent list of cutaneous irritants. It is for this reason that the following case is reported.

#### REPORT OF CASE

Miss W. V., a nurse, age forty, was referred to us on July 14, 1930, by Dr. H. W. Wall. She complained of an itching, weeping eruption of one week's duration involving both upper extremities, especially the forearms, the face, and ears. According to the patient the skin condition began as a quarter-sized erythematous itching area on the lateral aspect of the right forearm. Calamine lotion was applied, but the eruption spread and became vesiculobullous in nature, with considerable oozing.

Past history was negative with the exception that the patient stated that she had had a dermatitis venenata due to poison oak when a child. Further that she had been compelled to give up her work as a surgical nurse several years ago because of hypersensitivity to bichlorid of mercury.

On examination the anterolateral aspects of both upper extremities, especially the forearms, presented a marked erythema. On the right forearm there were

Fig. 1.—*Wigandia caracasana*.

numerous papulovesicles and bullae present with considerable weeping. On the left forearm and arm there was a diffuse erythema. The left ear was swollen to twice its normal size and was markedly erythematous. The face presented a diffuse erythema with some swelling. There was marked itching and burning of the involved areas. There were no linear lesions made up of small papulovesicles.

The patient was employed as a night nurse on a medical case and was unable to recall any contact with plants. A diagnosis of dermatitis venenata of unknown origin was made and aluminum acetate wet dressings were prescribed. The next day she returned considerably improved. Three days later the condition was much worse and was spreading. At this time, in spite of a negative history, a diagnosis of dermatitis venenata, due to poison oak, was made and an injection of poison oak extract was given, as were three more in the following ten days.

On July 31, 1930, the patient called, stating that she had determined the cause of her eruption. This she believed to be a large plant growing in the yard. She was in the habit of watering the lawn each afternoon, and in turning on the water the outer aspect of her right forearm came in contact with the leaves of this plant, which was growing by the water hydrant. She further stated that a neighbor had a similar eruption on her face. The neighbor had independently reached the conclusion that the cause of this eruption was the above-mentioned plant whose leaves had brushed her face. Finally, believing this plant to be poisonous, the patient had requested her Japanese gardener to cut off all of the larger leaves near the ground. This the gardener refused to do, saying that the plant was poisonous and that every time he brushed his arms and forearms against its leaves (as he did when mowing the lawn) he suffered a very itchy, weeping eruption of the forearms and backs of the hands.

On August 28, 1930, the patient (who was entirely well), after much persuasion on our part, consented to a patch test with both the leaf and stem of this plant. These were applied to the right forearm for

a period of five minutes only. On the following day she reported an erythematous papular itching eruption in the two areas tested. Five similar patch tests on normal individuals were negative.

With the aid of Doctor Haupt of the botany department of the University of California at Los Angeles, the plant was identified as *Wigandia caracasana*, variety *macrophilla* (Fig. 1). Concerning this plant, Bailey<sup>4</sup> states that "this is a larger leaved form which grows rather taller than the ordinary type. It is the Mexican form of the species and the one mostly in culture. Their leaves are covered with stinging hairs similar to nettles. Many large specimens are seen in California, but in general the plants are not much used in North America." The plant often grows to a height of ten feet or more, and has leaves measuring up to eighteen by twenty-four inches. In April a cluster of showy lilac-colored flowers is seen at the uppermost part of the stalk. When leaves or stalk are crushed, a brownish stain discolors whatever it comes into contact with and, in the case of white cloth, remains even after washing with soap and water.

#### CONCLUSION

A case of dermatitis venenata, in which the causal agent has been definitely proved to be *Wigandia caracasana*, is reported. This is, as far as we know, the first reported case of dermatitis venenata due to that plant.

Since this plant is not at all uncommon in southern California, there is reason to believe that many such cases have occurred but have been diagnosed as due to poison oak, primrose, and other plants.

2007 Wilshire Boulevard.

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**Advice in Regard to Marriage.**—There are many difficulties involved in the German system of obtaining official evidence from physicians with regard to the suitability of candidates for marriage. In Sweden and Norway candidates for marriage are required to take an oath in regard to the condition of their health, but are not subjected to examination. It seems probable that this is a better method, as even on examination a latent stage of syphilis cannot be detected, and women particularly find it very obnoxious to be subjected to an examination from which even prostitutes are free in many countries. It seems probable that the eugenic conscience of the people is stimulated more by the necessity of taking an oath than by the official compulsion of an examination. Even on examination there are many things that cannot be brought out unless the patient tells the truth, such as sexual perversions, addiction to cocaine, epileptic attacks, former attacks of manic depressive insanity, etc. It is a serious thing to impose on the physician the task of testifying that an individual is in condition to marry safely, and many physicians object to giving such written testimony. It would perhaps be better to place the responsibility on the individuals themselves, as is done under the Swedish and Norwegian system.—G. In. Mitt. d. deutsch. Gesellsch. z. Bekämpf. d. Geschlechtskr., Berlin, 1930, xxviii, 242.

## California and Western Medicine

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**Leaflet Regarding Rules of Publication.**—California and Western Medicine has prepared a leaflet explaining its rules regarding publication. This leaflet gives suggestions on the preparation of manuscripts and of illustrations. It is suggested that contributors to this journal write to its office requesting a copy of this leaflet.

## EDITORIALS\*

SIXTIETH ANNUAL SESSION, CALIFORNIA MEDICAL ASSOCIATION, SAN FRANCISCO, MONDAY, APRIL 27, THROUGH THURSDAY, APRIL 30, 1931

*Complete Scientific and Other Program Is Printed in this Issue.*—The caption of these comments tells much of the story. That caption may be called the Foreword or Call to the Sixtieth Annual Session of the California Medical Association, to be held in the city of San Francisco, with central headquarters at the Fairmont Hotel, on Monday, April 27, through Thursday, April 30, 1931.

On other pages of this issue will be found the complete scientific program and information concerning the clinics to be given at the University of California and at Stanford University Medical Schools. The social features and diversions are also there commented upon.

The headquarters are to be at the Fairmont Hotel, which is close to the heart of the city, but out of the beaten track of much of the noise and hurly burly of modern urban life. The Fairmont Hotel is large and spacious and is admirably adapted for convention needs such as come into play at an annual session of the California Med-

\*Editorials on subjects of scientific and clinical interest, contributed by members of the California Medical Association, are printed in the Medicine Today column which follows.

ical Association. It has all the proper settings for contact groupings of a family or fraternal nature.

The Committee on Scientific Program and the Committee on Arrangements have given much thought and effort in their desire to make this Sixtieth Annual Session one of the memorable reunions of the members of the California profession. It is safe to promise a pleasant and profitable time to every member who attends.

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### *The Great Value and Joy from Attendance at Annual California Medical Association Sessions.*

—Too much emphasis cannot be placed upon the value of attendance at these annual sessions. Members who are in position to go to the meeting and who do not do so, through their absence rob themselves of much that adds to professional living. On this point, one might well refer to one of the opening sentences of Doctor Pepper of Philadelphia, in his Scripps Lecture on Anæmia which is printed in this issue, and wherein he states:

"There is always benefit in exchange of ideas and in new contacts. Often one gains more at a medical convention from the informal chats in the corridors than from the presentations in the meeting hall."

So if you belong to the group of those who do not enthuse at being in constant attendance in the meeting rooms of the various scientific sessions of the California Medical Association, it is possible that you could still profit at an Annual Session in other ways, as indicated by Pepper. It is a wonderful and beneficial habit to develop, this attendance at annual sessions of our state medical association, with its rubbing of shoulders, greeting of old and new friends, breaking bread in informal exchange of opinion and renewing of faith and inspiration in the atmosphere where all are alert to the bigger and broader and better things and aims of the profession of medicine. Every member of the California Medical Association who can arrange his work to do, should make an earnest effort to go to San Francisco some time between April 26 and April 30.

If you have not made your hotel reservations, you are urged to do so at once, for there is every indication of a very large registration, and hotel accommodations in the associated convention hotels may be somewhat difficult to obtain at the last moment.

Scan also, at your early convenience, the scientific and other programs which are printed in this issue. (See pages 287-308.)

A perusal of the many treats in store may lead you to make a special effort to go to San Francisco. If not, it will be good for you through a perusal of the program, to get at least the spirit of the gathering.

The Sixtieth Annual Session should be a milestone in California Medical Association progress. Your presence as one of the participants will help make it so. Decide, therefore, to be among those present.

**PREMEDICAL COURSES—HAVE THE SCIENCE SUBJECTS BEEN OVERVALUED**

*On the Cultural Value of Premedical Courses.*—In the March number of the *Journal of the Association of Medical Colleges* are two articles of special interest. One, on the "Relative Value of Cultural Courses in Premedical Training," is from the pen of Edward S. Thorpe, Jr., Assistant Dean of the University of Pennsylvania School of Medicine. The other article, captioned "Culture Value of the Medical Curriculum," has as its author E. P. Lyon, Dean of the University of Minnesota Medical School. Dean Thorpe holds an M. D. degree, but Dean Lyon, while a Ph. D., is not a graduate of a medical school.

These two papers brought out a very interesting discussion at the forty-first annual session of the Association of American Medical Colleges, which was held in Denver, October 14-16, 1930. It is significant that the majority of speakers agreed that too much emphasis had been laid upon the value of science studies in the premedical courses. Or to put it in another way, it seemed to be the consensus of opinion that the provision of a stipulated number of compulsory science credits in premedical courses was serving no very special purpose; and that the results of such study courses, as noted in students who had stressed scientific courses in premedical training were such that there could be no warrant for a conclusion that such science studies were preferable to cultural or humanistic studies as a basic preparation of training in and for the practice of medicine.\*

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*Dean Lyon's Viewpoint on Culture.*—The need of culture as a part of the fundamental equipment of a well-trained medical man was emphasized by Lyon and others, the term culture being used in the special sense of catholicity of outlook.

Lyon's concluding paragraph concerning culture brought out the following thought, which to many must appeal as a quite satisfactory concept:

" . . . I am so deeply impressed with the fact that culture is something built on a hereditary foundation,

\* On the subject of requirements for admission to the medical colleges, the by-laws of the Association of American Medical Colleges make certain fundamental provisions. The essence of these provisions have been adopted in the medical practice acts of a considerable number of commonwealths of the United States. Some quotations from the by-laws are here made because of their pertinence to the matters under discussion:

"Subsection 1. The minimum of collegiate instruction required for entrance to medical schools and medical colleges in membership in the Association shall be 60 semester hours of work, which shall include the subjects hereinafter specified. . . ."

" . . . The 60 semester hours of collegiate instruction, indicated above, shall include a minimum total number of semester hours in each of certain required subjects and the specified science subjects shall include a minimum number of semester hours of laboratory work as follows:

Required Subjects	Minimum Total Semester Hours	Hours of Laboratory Work
1. General Chemistry (a)	8	4
Organic Chemistry (b)	4	0
2. Physics (c)	8	2
3. Biology (d)	8	4
4. English Literature and Composition (e)	6	

on a temperament, on a broad interest, and so on, that I give very little attention to the avenues through which the man goes to get it. He will get it, I feel certain, if he has the inner urge. It is something far different from the outside coverings, the amenities of life, the ability to choose the right necktie, and so on. It is deeper than habit. It is built on a curiosity and fine feeling which are innate in the individual. It does not matter much through what avenue he pursues it nor to what profession he aims. He will get features of it no matter what his curriculum. . . ."

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*Dean Thorpe's Observations on Medical Matriculants and the Need of Broad Learning.*—Dean Thorpe wrote of his experiences in the admission and supervision of medical students who had come under his observation. He was impressed by the fact that many applicants for admission in the freshman medical classes seemed more concerned with the submission on their parts, of adequate certificates of ample units in sciences like biology, physics, and chemistry than they were in their capacity to write on their qualifications in clear hand and in good and logical English. In Thorpe's tables dealing with some 644 medical matriculants, the highest honors in medical courses were taken by students who had minimum rather than maximum credits in science.

Apropos of the physician's place in the community. Dean Thorpe brought forward these thoughts:

" . . . From earliest times the physician has held a high position in society. He has maintained this status because he was usually a man of broad learning. Are we not running the risk of turning out men who will be mere scientific robots? . . ."

"Are we not graduating men who can speak glibly—though ungrammatically—of the pH of the gastric juice and chemical processes of digestion, but who cause their dinner table partners in polite society to have mental indigestion because of their lack of broad culture?

"Before we demand that all our applicants prepare themselves for a narrow life of research in physiological chemistry or biophysics, let us stop and remember that 98 per cent of them will practice medicine—the Art as well as the Science."

"Let us, therefore, demand merely that our students come to us really knowing the fundamental principles of science and the relation of science to other branches of knowledge.

"Let us not require science in terms of semester hours, but science in terms of actual knowledge. Let us advise young men to ground themselves in the principles of science and to acquire, if possible, a taste for history, philosophy, literature and art so that they may look forward to the fulsome years of middle age and truly say with the poet, 'Forsan et haec olim meminesse juvabit.'"

\* \* \*

*Canada Accepts Either an A. B. or B. S. as Ample Premedical Education.*—In the discussion of these two papers of Lyon and Thorpe, Dr. J. C. Simpson of McGill University stated that in Canada the possession of either an A. B. or B. S. degree was acceptable in the way of premedical education. He also had noted the proficiency of classically trained men, when they took up the study of medicine, and ended his discussion thus:

" . . . The lesson I learned from that was this: It is not so much the subject that forms the curriculum as it is the way in which that subject is used to give mental training, and that, after all, no matter what instrument is used, if a man gets good mental training, that is going to show up whether he goes into science or into the humanistic studies."

\* \* \*

*Professor Novy's Comments on Premedical Education of a Former Generation.*—Dr. F. G. Novy of the University of Michigan, in discussing the papers, called attention to the training of not so many decades ago, when with far lesser premedical education and much more limited medical curricula, men were graduated from medical schools, whose names through their observations and writings are still familiar in the annals of medical literature. Professor Novy had the following to say on the premedical education of former days:

" . . . My earliest experience was in the days when students were admitted from high school. Nowadays we admit them with ninety hours, or four years, and some of them are postgraduates. I have often thought of the good days when students came perfectly fresh from the high school, with an eagerness for knowledge that had not been rubbed down by subsequent work. They were the ones who gave the most enthusiastic attention to the work. We still have, of course, students who work enthusiastically, but there is something that you cannot put your finger on that has been rubbed off, as it were, because they have been initiated into science, and consequently they feel that grades are the most important things with which they can come across."

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*Dr. MacTavish Blames the Medical Schools for Overstressing the Value of Grades.*—From Dr. W. C. MacTavish's discussion the following is taken:

" . . . Another thing; the question of grades in undergraduate work. Whose fault is it that the student tries to earn good grades in his courses? It is certainly the fault of the medical schools. They will not take a man unless he has good grades. The thought certainly must be uppermost in the student's mind while at college that he must earn good marks in the sciences and other subjects, otherwise he will have no chance of being admitted to a medical school.

" In regard to culture, I remember very well when students were admitted to medical school directly from high school and the majority were certainly not cultured. I know quite a few of such, some who are members of our faculty, whose appreciation of music, art and literature now compares favorably with men who have taken a doctor's degree in literature or music."

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*A Plea for a Certain Amount of High-Grade Didactic Instruction.*—Doctor MacTavish also brought forward another thought that might well be pondered over by ultraproponents of scientific and superpremedical courses. His thought has to do with didactic instruction, a something which many physicians who received their training years ago will remember with deep appreciation, as they think of some of their senior professors and masters whose lectures were models and inspira-

tions, not only because of the medical learning contained therein, but because of the classical portrayal in thought and speech.

MacTavish's comments on the value of didactic lectures were as follows:

" . . . As a corollary to this, I come to a pet hobby of my own, which, to many in this audience, will be heresy. I am one of those who contend there is a place in the medical curriculum for the didactic lecture. I do not think it would be well for medicine should the day arrive when the didactic lecture in the undergraduate training of the student will be entirely superseded. If there is one reason more than another why I think that lecture should be retained—and the Lord knows I do not want it to be retained in the case of every person who might attempt to deliver lectures on his subject, but for the sake of those chosen few who can lecture to medical students in such a way as to instill not only culture but love of their profession, respect for those who have gone before and many other of those qualities which we are in the habit of summing up under the word culture—I think there is sufficient ground for retaining the didactic lecture. . . . "

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*These Educational and Training Problems Should Again Be Carefully Studied.*—It is evident from what has been above quoted that medical teachers are not a unit in believing that our modern day premedical and medical curricula, the basic requirements of which have been incorporated in so many state medical practice acts, represent the alpha and omega in these lines of education. It is a healthy sign that prominent leaders in our medical schools have the courage to call attention to the deficiencies which exist in some of the standards we have laid down for ourselves. It is quite possible that in the worship of the fetish of standardization which has been so prevalent a vogue in the last two or three decades, that though we have improved certain faults existing in medical schools of the pre-Rockefeller-Flexner report period, we, after all, may not have added so much as we formerly thought to the cultural influence of the medical profession or to the protection of the public health, by the somewhat drastic adoption of these newer standards. We have fewer nonsectarian medical schools it is true, but we also have more cultist schools and a vastly greater number of cultist practitioners who have been launched upon the public, with training in many instances very considerably less than that which would have been given by most of the nonsectarian medical schools which, under the hue and cry of supposedly higher and better standards, were forced out of existence. As a result the public, rather than the profession, pays the price, when such lesser trained sectarian practitioners receive legal licenses to practice.

The Association of American Medical Colleges is to be congratulated upon in again taking up a survey of these problems and studying them anew. The light of the experience as gained in the last two decades should aid us in coming to a better conclusion on the correctness of our theories. If it should be shown that we are in error, we should modify the educational and training requirements of our medical colleges accordingly.

**PRESIDENT KINNEY OF THE CALIFORNIA MEDICAL ASSOCIATION VISITS COUNTY SOCIETIES**

*The By-Laws of the California Medical Association Provide for Visitation of County Societies by the State Society President.*—In the by-laws which were adopted by the California Medical Association at its last San Diego annual session it was provided (Chapter VI, Section I) that the president of the California Medical Association during his term of office should visit as far as was practicable "the various sections of the state and assist the councilors in building up the component county societies, and in making their work more practical and useful."

\* \* \*

*President Kinney Visited Northern County Societies in March.*—At the 1931 spring meeting of the Council, an itinerary was arranged by President Lyell C. Kinney of San Diego for such a series of visits in the county societies of the Sacramento Valley and middle and northern California. In conjunction with district councilors and other officers, a series of meetings was arranged for the first two weeks of March. The preliminary reports which have come to CALIFORNIA AND WESTERN MEDICINE of those meetings indicate that President Kinney and his colleagues were not only received in most cordial fashion by the members of the county societies visited, but that the meetings which were held will result in great good to the California Medical Association through the increased interest which was brought out in the discussion of some of the problems of organized medicine in California.

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*Such Official Visitation Should Be Made by Every State Society President.*—A full report has been promised on this first official tour of some of the California county societies by a state society president. In the meantime CALIFORNIA AND WESTERN MEDICINE wishes to express the appreciation of the Association to the members of the county societies who attended these recent meetings, many members in northern counties traveling long distances in order to be present. CALIFORNIA AND WESTERN MEDICINE desires also to express the hope that from now on it shall be understood that any member who accepts the high office and honor of the presidency of the California Medical Association will be expected as a gesture of return appreciation on his part to plan for a series of visits such as was this year inaugurated by President Kinney. Every component county society needs such official visitation annually and will be the better for the entertainment of such official guests, through the greater interest in the broader aspects of organized medicine work which will result therefrom.

**FURTHER COMMENT ON PUBLIC HEALTH LEGISLATION**

*The California State Legislature Is in Session.* When the state legislature is in session, officers of the California Medical Association who have special responsibilities in watching all proposed laws which have a bearing on public health and medical profession interests are in a state of mental suspense that is anything but soothing. For as with juries, there is no way of knowing what a legislature will do, or rather, what some of its members will or would do.

A few comments on some of the current worries of certain of the California Medical Association officers and its Committee on Public Policy and Legislation may be of interest at this time.

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*How Senate Bill 175 (Fellow) Came Out of Committee Without Warning.*—Witness, for instance, as a good "worry example," the Associated Press dispatch from Sacramento which was printed in the daily press on the day on which these lines were written. The item has to do with Senate Bill 175 (Fellow), the title of which was noted on page 223 of the March issue of CALIFORNIA AND WESTERN MEDICINE. That title seemed innocent enough. Not so the text of the bill, because it would practically legalize the practice of medicine by corporations. Without warning and without giving the Sacramento representatives of the California Medical Association an opportunity to be heard, that bill was favorably reported out of committee as per the Associated Press dispatch taken from the Los Angeles Times, which follows:

**HOSPITAL SERVICE CONTROL BILL APPROVED**

Sacramento March 18 (AP).—The State Government Efficiency Committee today approved for passage Senator Fellow's bill providing for state control of medical and hospital service companies through a commissioner appointed by the Governor.

The commissioner would be connected with the State Department of Investment and would function part time with a \$2400 annual salary. He would license medical and hospital service companies at \$250 for the first year and \$125 each subsequent year.

The unexpected action noted in the above newspaper item necessitated immediate effort from different parts of the state, so that State Senators might be made acquainted with the fact that the proposed law would practically give corporations the legal right to practice medicine for profit, a something to which all members of the profession who believe in the protection of professional standards must make objection.

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*Senate Bill 175 (Fellow) Would Nullify Superior Court Judge Blake's Opinion.*—On page 846 of the November 1930 number of CALIFORNIA AND WESTERN MEDICINE was printed the opinion of Superior Court Judge Samuel R. Blake. That opinion, under present conditions, is again worthy of perusal. From it two paragraphs will be here quoted:

" . . . If, in the last analysis, corporations are allowed to practice medicine as a general proposition, it is the opening wedge to the commercialization of the practice of the learned profession of medicine, and permits the creeping in of many unethical and uncontrollable factors which the law has heretofore rigidly sought to avoid. . . .

" . . . Unquestionably, if the corporation does not come within the provisions of the Medical Practice Act, it would be immune from its penalties or provisions; therefore it is important to the welfare of the people of the State of California; and hence, the importance of the prohibiting of a corporation from practicing medicine as a corporation and engaging in that business through its agents for profit. . . ."

All county society committees will no doubt watch this bill and coöperate in fullest measure with the California Medical Association Committee on Public Policy and Legislation, of which President-Elect Junius B. Harris of Sacramento is the chairman.

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*Assembly Bill 477 (Neilson) for State Medical Libraries.*—The state medical library bill, which was reintroduced in the present session of the legislature, was briefly presented and discussed on page 893 of the December 1930 number of CALIFORNIA AND WESTERN MEDICINE. The bill, as submitted, was a modification of the measure which was introduced two years ago. A few words of further review may again be made for the benefit of those who may have given no attention to this measure in the past.

Inasmuch as California maintains at Sacramento a state general library which operates under the jurisdiction of the California Department of Education, it was assumed that the proposed "state medical library" should naturally find a place under the same department (as a subdivision of the state general library). Because the funds to be expended were public moneys which could only be expended through public departments or agencies, and in order to do away with the maintenance expense of rentals of quarters for branches at San Francisco and Los Angeles, it was provided that such branches when established should be housed in buildings of the University of California.

It was found, however, that the California Department of Education was not favorably inclined to taking over the supervision of such a state medical library. It was also learned that a system of divided control was not deemed desirable by the regents of the University of California. The bill was accordingly rewritten so that the state medical libraries should be under the control of the state university, with divisions of approximately equal size in San Francisco and Los Angeles. The libraries would work in close co-operation with existing medical libraries in those cities and would aim to particularly provide "packet library service," which would promptly, through the mails, bring books and literature on any subject to members of the profession in the northern and southern sections of California. It is hoped that the bill as amended will go on to passage.

In the December CALIFORNIA AND WESTERN MEDICINE editorial above referred to it was stated:

" . . . The basic thought in such a proposal rested on the principle that these reserve funds being now in excess of the requirements and needs of the California Board of Medical Examiners, and having arisen from special taxes on physicians, should not be diverted into the general expense funds of the state to be used on roads or other state activities; but should go back to the physician citizens to be used in a state activity that would work to the betterment of California's public health interests. A state medical library seemed a fitting means by which such allocation of funds could be more than justified. . . ."

That the possibility of diversion of professional examining board funds being diverted back into the general funds of the state was not a figment of the imagination of the editor is shown in Assembly Bill 547, in which it is provided that certain funds from the pharmacy board shall be diverted into the general fund.

And as this is written it has come to us that a similar attempt may be made on reserve funds of the California Board of Medical Examiners. It is to be hoped that this information is only an idle rumor, but if it should materialize, then the five thousand members of the California Medical Association, with all the influence which that organized group of physicians can exert, should do their utmost to inform state officials and state senators and state assemblymen why such a course of action would be most unjust and improper (in view of the manner in which those reserve funds have been accumulated from medical men and women only). Of that, however, more, if occasion should arise. It is to be hoped that no such occasion will present itself.

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*Senate Bill 463 (Williams) on Intern Year Requirement.*—This bill would have amended Section 9 of the California Medical Practice Act in such form that one year of internship or equivalent training would have been added to the present four-year medical course. This bill went down to defeat in committee under the onslaught of the osteopathic practitioners, who, when they secured their initiative for an independent board several years ago, tied their initiative law into the state medical practice act. On that account, any attempt by nonsectarian physicians to raise the standards of nonsectarian licensure brings into being at once most determined opposition from these cultist practitioners, since the amendments would apply to osteopaths also. Of all this also more, perhaps, at some other time. The whole story is true, but very sad.

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*Assembly Bill 1281 (Jeperson and Bliss) for a Board of Naturopathic Examiners.*—This bill proposes to create a Board of Naturopathic Examiners. It would let down the bars and open wide the gates for licensing an unlimited number of individuals without any demand on the part of the state, for real qualifications. After the licenses

were issued the "naturopathic doctors" would be permitted to use drugs, but would be prohibited from doing "major surgery," a term most difficult to legally define, and with the implication that they might be permitted to do "minor surgery (whatever that is, in law). If space permitted, the deficiencies of this proposed bill, from the standpoint of modern-day university standards of medical training, might be further discussed. The bill is mentioned so that its number may be remembered.

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*A Proposed Bill to License Clinics and Health Centers, Sponsored by the Los Angeles County Health Officer and Board of Supervisors.*—A proposed law which has been drafted, but which at the time of this writing has not yet been introduced into the legislature, is one that would demand that every clinic, health center or institution of similar designation or import, which cared for ambulatory patients, would be required to secure a license annually from the California State Board of Health. This bill was prepared by Dr. J. L. Pomeroy, County Health Officer of Los Angeles, and has received the endorsement of the Los Angeles County Board of Supervisors. It was worked over by the Medical Advisory Board of the Los Angeles County Health Department, and was also considered by the proper committees of the California Medical Association. This bill is modeled somewhat after similar laws which have been enacted in the states of Massachusetts and New York. The major object in the measure is to bring about an annual registration of every such clinic or similar institution in California, in order that the public health interests might be properly safeguarded. There was no thought to interfere with the full activities of legitimate clinics, but it was kept in mind that there was great need for some type of inspection and licensure so that organizations or institutions which do not measure up to proper standards or which were organized for ulterior motives might come under routine supervision.

Members of the California Medical Association will no doubt remember that at the last annual session of the California Medical Association the Committee on Medical Economics, through a special subcommittee of which Dr. John C. Ruddock was chairman, brought in a report on the findings which had been gathered in a preliminary survey of clinics and dispensaries in California. This report of Doctor Ruddock was printed in the July 1930 number of CALIFORNIA AND WESTERN MEDICINE, page 527.

The bill which was drafted by Dr. Pomeroy is in full line and sympathy with the recommendations made in the above mentioned report. It is hoped that this particular bill will also go on to passage.

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*Other Proposed Laws.*—The March number of CALIFORNIA AND WESTERN MEDICINE, page 223, listed four pages of other proposed laws having

a relationship to public health and medical profession interests. Even those there listed did not represent the complete summary of all such measures. Each of the proposed laws which was listed was considered in a recent all-day joint session of the Executive and Public Policy and Legislation Committees of the California Medical Association and all will be closely watched by the state association officers.

It is not possible to consider all these bills in detail in CALIFORNIA AND WESTERN MEDICINE. County society presidents and secretaries should remember that every county society should have a committee on public policy and legislation, keeping in mind always, however, that every such county society committee should work always through the state society Committee on Public Policy and Legislation.\* In that way, when emergency situations arise, much more efficient work can be accomplished. In grave situations, (and grave situations arise during a session of the legislature) rifle slugs are often more effective than shotgun ammunition. On all this and related matters, perhaps mention will again be made in a future number of CALIFORNIA AND WESTERN MEDICINE.

\* The California Medical Association Committee on Public Policy and Legislation consists of Dr. Junius B. Harris, chairman, 1127 Eleventh Street, Sacramento; Dr. William Duffield, 516 Auditorium Building, 427 West Fifth Street, Los Angeles; Dr. Joseph Catton, 490 Post Street, San Francisco; Dr. Lyell C. Kinney, 510 Medico-Dental Building, 233 A Street, San Diego. Any member may be consulted, but always send confirming memoranda to the chairman, Doctor Harris.—G. H. K.

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Paralyzed Muscles Yield to Exercise in Warm Water.—Muscle training under water has come to be one of the most useful methods of treating persons who have had infantile paralysis. A unique sanatorium at Warm Springs, Ga., devoted exclusively to this treatment, is described by Mrs. Edith Reeves Salenberger in the October issue of *Hygeia*.

Warm Springs takes its name from powerful springs of mineral water that has a temperature of 89 degrees Fahrenheit the year round. In 1924 Franklin D. Roosevelt, governor of New York, who had been severely crippled by an attack of poliomyelitis in 1921, visited Warm Springs. He was greatly benefited by the treatment and determined that the place should be made available to victims of the crippling disease.

In 1927 Mr. Roosevelt organized the Georgia Warm Springs Foundation as a charitable institution not run for profit. Philanthropic gifts made possible the erection of buildings and maintenance of a staff. As it has no endowment fund the Foundation cannot admit free patients, but the charges are moderate and cover only the actual cost per patient.

An orthopedic surgeon is in charge of the experiment. A graduate nurse who is a trained physiotherapist heads a staff of ten or twelve young women who give the treatments in the pools. A medical attendant holds a clinic three times a week and his services are available at other times when needed. Atlanta's hospitals, seventy-five miles away, are available for unusual emergencies.

Except for their routine of treatments, meals and sleep, patients at Warm Springs lead free, simple lives of their own choices. The Foundation does not wish to develop a hospital and the general atmosphere is unlike a hospital even to the extent that the staff members do not wear uniforms. Patients receive all the help they need, but they are encouraged to do more for themselves as their strength increases.—*Hygeia*.

## MEDICINE TODAY

This department of California and Western Medicine presents editorial comment by contributing members on items of medical progress, science and practice, and on topics from recent medical books or journals. An invitation is extended to every member of the California, Nevada and Utah Medical Associations to submit brief editorial discussions suitable for publication in this department. No presentation should be over five hundred words in length.

**S**wollen Feet and Ankles.—Not infrequently patients, especially women, complain and suffer from "puffiness" of the ankles and feet. Their suffering is in part actual, making walking and prolonged standing impossible; in part, also, however, it is merely psychic since the large ankles are unsightly and insult the aesthetic sense of the patient. This latter is the reason why dancing and other enjoyments such as golfing, tennis, etc., all of which necessitate walking or running, are so frequently given up.

These patients travel from pillar to post seeking a cure; from chiropractor to beauty parlor, in order to have the contour of their feet and legs restored. No amount or mode of physical therapy, no massage or manipulation gives them any tangible and permanent result.

The failure of cure can be ascribed to the lack of proper diagnosis. First determine the cause of the illness and only then institute the adequate treatment.

It is necessary to differentiate these conditions from edemata which are accompanied by albumin in the urine due to circulatory disturbance. Foot edema will arise in heart disease or in the course of any exhausting and debilitating disease which has weakened the heart action. It will very frequently occur in obstructive valvular heart conditions and in diseases of the lung and kidney. Among the other constitutional causes which lead to foot-swelling, the anemias are of the most frequent offenders.

Varicose veins, phlebitis, and obstruction of the lymph vessels are the local factors which result in the same symptom.

Another cause for puffy ankles and legs is the increase of subcutaneous fat. It may be a local manifestation of general obesity or it may be a localized adiposis.

All these conditions are enumerated merely as differential diagnostic possibilities; they are to be excluded by clinical and laboratory findings in order to arrive at the diagnosis of "swollen feet" of unknown origin.

Pathologically there is an excess of water in the tissues, a true edema, which is the cause of the thickening of the feet, ankles, and leg.

No other explanation for this phenomenon of water accumulation in the tissues can be advanced than that it is an acidosis. The exact cause of the acidosis is not always determinable, and, as a matter of fact, not demonstrated for a certain length of time. Only when the water gathers in the feet and legs, the edema makes itself visible. The lower extremities become affected by virtue of gravitation of the water after a prolonged upright position.

The physiological basis for this constitutional condition of acidosis is explained by a reduction of the concentration of the bicarbonates in the blood plasma, compared to the normal state. Whatever produces this change in the bicarbonate value in the plasma, is not exactly known.

Knowing that this condition of edema is but a local manifestation of a constitutional acidosis, the treatment should be outlined to overcome the state of the general body. Alkalization of the tissues should be the aim. This is attained by reducing the acid-forming substances in the food. The carbohydrates must be eliminated or markedly reduced in accordance with the need and effect; but the vegetable and fruit intake, mainly citrus fruits, should be greatly augmented in the diet.

In addition to this, the patient must take alkalies in sufficient doses in order to raise the carbonates of the blood plasma and to increase the alkalinity of the tissues generally. The most useful alkali for this acidosis is sodium bicarbonate and potassium citrate. The amount necessary to be taken of each of these substances will depend upon the tolerance of the individual and the degree of the acidosis. The minimum of 30 grains of each may suffice; and a maximum of 300 grains of each may have to be administered daily to gain the necessary effect.

A. GOTTLIEB, Los Angeles.

**Tannic Acid Again.**—The use of 5 to 10 per cent aqueous solutions of tannic acid has been accepted by most workers as the treatment par excellence, to date, for burns. Reasoning from above, it has been my practice to treat all abrasions and superficial lacerations by painting with 5 to 10 per cent tannic acid. A small compress of tannic acid applied for one hour will have the desired effect. The abrasion or superficial laceration becomes covered with a hard, tough, aseptic, tanned crust or slough. Epidermization takes place beneath the crust, and no stage of moist granulation develops, thus avoiding an infected granulating ulcer and the lymphangitis and cellulitis that sometimes complicates healing.

I am positive that the indolent slow-healing ulcers resulting from abrasions of the lower extremities will heal rapidly under similar treatment. It is a well-known fact that any wound heals more rapidly under a sterile crust of dried exudate than under any other dressing. Tannic acid solution produces a sterile crust with a minimum of tissue damage. A large field for this type treatment is in the abrasions and superficial lacerations of the extremities of children.

EDMUND BUTLER, San Francisco.

# Program

THE SIXTIETH ANNUAL SESSION

*of the*

CALIFORNIA MEDICAL ASSOCIATION

*To be held at*

FAIRMONT HOTEL, SAN FRANCISCO, APRIL 27-30, 1931

## OFFICERS AND COMMITTEES, 1931

### GENERAL OFFICERS

**LYELL C. KINNEY**, San Diego, President

**JUNIUS B. HARRIS**, Sacramento, President-Elect

**EDWARD M. PALLETTE**, Los Angeles, Speaker of House of Delegates

**JOHN H. GRAVES**, San Francisco, Vice-Speaker of House of Delegates

**EMMA W. POPE**, San Francisco, Secretary-Treasurer and Associate Editor

**GEORGE H. KRESS**, Los Angeles, Editor

**HARTLEY F. PEART**, San Francisco, General Counsel

**HUBERT T. MORROW**, Los Angeles, Associate General Counsel

### COUNCILORS

#### First District

Mott H. Arnold, San Diego (1932)  
Imperial, Orange, Riverside and San Diego Counties

#### Second District

William Duffield, Los Angeles (1933)  
Los Angeles County

#### Third District

Gayle G. Moseley, Redlands (1931)  
Kern, San Bernardino, San Luis Obispo, Santa Barbara  
and Ventura Counties

#### Fourth District

Fred R. De Lappe, Modesto (1932)  
Calaveras, Fresno, Inyo, Kings, Madera, Mariposa,  
Merced, Mono, San Joaquin, Stanislaus, Tulare  
and Tuolumne Counties

#### Fifth District

Alfred L. Phillips, Santa Cruz (1933)  
Monterey, San Benito, San Mateo, Santa Clara  
and Santa Cruz Counties

#### Sixth District

Walter B. Coffey, San Francisco (1931)  
San Francisco County

#### Seventh District

Oliver D. Hamlin, Oakland (1932)  
Alameda and Contra Costa Counties

#### Eighth District

Robert A. Peers, Colfax (1933)  
Alpine, Amador, Butte, Colusa, El Dorado, Glenn, Lassen,  
Modoc, Nevada, Placer, Plumas, Sacramento, Shasta,  
Sierra, Sutter, Tehama, Yolo and Yuba Counties

#### Ninth District

Henry S. Rogers, Petaluma (1931)  
Del Norte, Humboldt, Lake, Marin, Mendocino, Napa,  
Siskiyou, Solano, Sonoma and Trinity Counties

#### Councilors-at-Large

George H. Hunter, Los Angeles (1932)  
Ruggles A. Cushman, Santa Ana (1933)  
Wm. H. Kiger, Los Angeles (1931)  
Joseph Catton, San Francisco (1932)  
T. Henshaw Kelly, San Francisco (1933)  
Edward N. Ewer, Oakland (1931)

### DELEGATES AND ALTERNATES TO A. M. A.

#### Delegates

Dudley Smith	(1931)	Joseph Catton
Oakland		San Francisco
Albert Soiland	(1931)	William H. Gilbert
Los Angeles		Los Angeles
Fitch C. E. Mattison	(1931)	James F. Percy
Pasadena		Los Angeles
Irving Ingber	(1931-1932)	W. Stevens(resigned)
San Francisco		San Francisco
Percy T. Magan	(1931-1932)	Charles D. Lockwood
Los Angeles		Pasadena
Junius B. Harris	(1931-1932)	John H. Shephard
Sacramento		San Jose

#### Alternates


### STANDING COMMITTEES

#### Executive Committee

The President, the President-Elect, the Speaker of the House of Delegates, the Secretary-Treasurer, the Editor, and the Chairman of the Auditing Committee, (Committee Chairman, T. Henshaw Kelly; Secretary, Emma W. Pope.)

#### Committee on Associated Societies and Technical Groups

George H. Kress, Los Angeles..... 1933  
Harold A. Thompson, San Diego..... 1932  
R. Manning Clarke (Chairman), Los Angeles..... 1931

#### Committee on Extension Lectures

Robert A. Peers, Colfax..... 1933  
James F. Churchill, San Diego..... 1932  
Robert T. Legge (Chairman), Berkeley..... 1931  
The Secretary..... Ex-officio

#### Committee on Health and Public Instruction

Henry S. Rogers, Petaluma.....	1933
Fred B. Clarke (Chairman), Long Beach.....	1932
Gertrude Moore, Oakland.....	1931

#### Committee on Hospitals, Dispensaries and Clinics

Gayle G. Moseley, Redlands.....	1933
John C. Ruddock (Chairman), Los Angeles.....	1932
Walter B. Coffey, San Francisco.....	1931

#### Committee on Industrial Practice

Mott H. Arnold, San Diego.....	1933
Packard Thurber, Los Angeles.....	1932
Ross W. Harbaugh (Chairman), San Francisco.....	1931

#### Committee on Medical Economics

Ruggles A. Cushman, Santa Ana.....	1933
John H. Graves (Chairman), San Francisco.....	1932
Jos. M. King, Los Angeles.....	1931

#### Committee on Medical Education and Medical Institutions

George G. Hunter, Los Angeles.....	1933
George Dock (Chairman), Pasadena.....	1932
H. A. L. Rykogel, San Francisco.....	1931

#### Committee on Medical Defense

Fred R. De Lappe, Modesto.....	1933
George G. Reinle (Chairman), Oakland.....	1932
Henry Snure, Los Angeles.....	1931

#### Committee on Membership and Organization

Jesse W. Barnes, Stockton.....	1933
Harlan Shoemaker, Los Angeles.....	1932
LeRoy Brooks (Chairman), San Francisco.....	1931
The Secretary.....	Ex-officio

#### Committee on History and Obituaries

Emmet Rixford, San Francisco.....	1933
Charles D. Ball (Chairman), Santa Ana.....	1932
Percy T. Phillips, Santa Cruz.....	1931
The Secretary.....	Ex-officio
The Editor.....	Ex-officio

#### Committee on Publications

Frederick F. Gundrum, Sacramento.....	1933
Morton R. Gibbons, San Francisco.....	1932
Percy T. Magan (Chairman), Los Angeles.....	1931
The Secretary.....	Ex-officio
The Editor.....	Ex-officio

#### Committee on Public Policy and Legislation

Joseph Catton, San Francisco.....	1933
Junius B. Harris (Chairman), Sacramento.....	1932
William Duffield, Los Angeles.....	1931
The President.....	Ex-officio
The President-Elect.....	Ex-officio

#### Committee on Scientific Program

Francis M. Pottenger, Monrovia.....	1933
Karl L. Schupp, San Francisco.....	1932
Lemuel P. Adams, Oakland.....	1931
Verne R. Mason, Los Angeles.....	1931
Clarence E. Rees, San Diego.....	1931
Secretary (Chairman).....	Ex-officio

### SPECIAL COMMITTEES

#### Committee on Arrangements—Annual Session

T. Henshaw Kelly (Chairman), San Francisco.....	1933
Arthur L. Bloomfield (General Meeting Program and Invited Guests).....	San Francisco
Howard C. Naftziger (Clinics).....	San Francisco
Daniel W. Sooy (General Arrangements).....	San Francisco
F. T. Sheehy (Golf).....	San Francisco
The Secretary.....	Ex-officio

#### Special Committee on Clinical and Research Prizes\*

George Dock (Chairman), Pasadena.....	1933
Emmet Rixford, San Francisco.....	1932
Eugene S. Kilgore, San Francisco.....	1931

\* Each year the California Medical Association offers two prizes of One Hundred and Fifty Dollars each, with certificates of award, for the two best papers on clinical and research subjects. Full information concerning the conditions laid down in these competitions may be had by addressing the Association secretary.

**GUEST SPEAKERS AT THE SIXTIETH ANNUAL SESSION  
CALIFORNIA MEDICAL ASSOCIATION**



WILLIAM LLOYD AYCOCK, M. D.  
Department of Preventive Medicine and  
Hygiene, Harvard University,  
Boston, Massachusetts



JEAN OLIVER, M. D.  
Department of Pathology, Long Island College  
of Medicine, Brooklyn, New York

VILRAY P. BLAIR, M. D.  
Professor of Clinical Surgery, Washington School of Medicine, St. Louis.

E. T. BELL, M. D.  
Professor of Pathology, University of Minnesota Medical School.

RALPH M. WATERS  
Associate Professor of Surgery, University of Wisconsin Medical School, Madison.

**SCIENTIFIC EXHIBITS**

- I. The staff of the Mt. Zion Hospital will exhibit material relative to the following subjects:
  1. The influence of potassium on cardiac irregularities—Electrocardiograph studies.
  2. Interesting cardiac arrhythmias.
  3. A motion-picture film showing operative technique for pulmonary embolectomy.
  4. Studies in uterosalpinography.
  5. Laboratory demonstration of the Aschheim-Zondek test.
  6. Unusual pathological specimens.
  7. Interesting urological material.
  8. Study of neuromata of the appendix.
  9. Recent developments in spinal anesthesia. Other exhibits may also be included.
- II. Radiological Exhibit.  
Viewing boxes will be found in the rear of the General Sessions meeting room.
- III. Pathological Exhibit.  
Pathologic specimens will be exhibited in the room adjoining the Gold Room.
- IV. Exhibit by American Heart Association.
- V. Exhibit of new instrument.

## MEMBERSHIP, 1931 HOUSE OF DELEGATES

## DELEGATES—EX-OFFICIO

Lyell C. Kinney, San Diego.....	President
Junius B. Harris, Sacramento.....	President-Elect
Emma W. Pope.....	Secretary-Treasurer
Edward M. Pallette, Los Angeles.....	Speaker of House of Delegates
John H. Graves, San Francisco.....	Vice-Speaker of House of Delegates
George H. Kress.....	Editor
Mott H. Arnold, San Diego (1932).....	Councilor 1st District
William Duffield, Los Angeles (1933).....	Councilor 2nd District
Gayle G. Moseley, Redlands (1931).....	Councilor 3rd District
Fred R. De Lappe, Modesto (1932).....	Councilor 4th District
Alfred L. Phillips, Santa Cruz (1933).....	Councilor 5th District
Walter B. Coffey, San Francisco (1931).....	Councilor 6th District
Oliver D. Hamlin, Oakland (1932).....	Councilor 7th District
Robert A. Peers, Colfax (1933).....	Councilor 8th District
Henry S. Rogers, Petaluma (1931).....	Councilor 9th District
George G. Hunter, Los Angeles (1932).....	Councilor-at-Large
Ruggles A. Cushman, Santa Ana (1933).....	Councilor-at-Large
William H. Kiger, Los Angeles (1931).....	Councilor-at-Large
Joseph Catton, San Francisco (1932).....	Councilor-at-Large
T. Henshaw Kelly, San Francisco (1933).....	Councilor-at-Large
Edward N. Ewer, Oakland (1931).....	Councilor-at-Large

## ELECTED DELEGATES

Delegates	Alternates
Alameda County (9)	
L. P. Adams	D. M. Allen
B. W. Black	F. H. Bowles
Daniel Crosby	W. L. Channel
C. A. Dukes	W. G. Donald
Robert A. Glenn	J. N. Ewer
W. H. Irwin	T. C. Lawson
C. L. McVey	Roy F. Nelson
Gertrude Moore	O. T. McAllister
G. G. Reinle	J. M. Reeves
Butte County (1)	J. O. Chiapella
J. J. L. Doyle	
Contra Costa County (1)	J. F. Feldman
U. S. Abbott	
Fresno County (3)	
D. I. Aller	A. E. Anderson
Guy Manson	C. O. Mitchell
T. F. Madden	Nell Jorgensen
Humboldt County (1)	
Burpee Cooper	Orris Myers
Imperial County (1)	
Eugene LeBaron	W. W. Apple
Kern County (1)	
F. J. Gundry	E. A. Schaper
Lassen-Plumas County (1)	
G. R. Fortson	George S. Martin
Los Angeles County (36)	
S. M. Alter	I. R. Bancroft
John V. Barrow	Fred B. Clarke
Walter P. Bliss	John C. Irwin
R. S. Cummings	H. W. Levengood
Robert V. Day	T. C. Lyster
George Dock	H. G. McNeil
Walter L. Huggins	R. P. McReynolds
William W. Hutchinson	A. J. Murrineta
Louis Josephs	Thomas C. Myers
William H. Kiger	John P. Nuttall
Joseph M. King	Sterling N. Pierce
Percy T. Magan	J. E. Pottenger
William R. Molony	Albert Soiland
Charles E. Phillips	Joseph K. Swindt
Carl W. Rand	H. B. Tebbetts
Harlan Shoemaker	Neal N. Wood
Henry Snure	Walter A. Bayley
C. G. Toland	John H. Breyer
B. Von Wedelstaedt	O. W. Butler
Peter H. Blong	R. Manning Clarke
Harry V. Brown	Philip S. Doane
John W. Crossan	Newton Evans
William H. Daniel	L. R. Lewis
John Dunlop	Sven Lokrantz
J. Frank Friesen	Lyle G. McNeile
O. E. Ghrist	Carl H. Parker
Scott D. Gleeten	R. E. Ramsay
Carl R. Howson	John C. Ruddock
F. C. E. Mattison	A. J. Scott
George D. Maner	R. W. Schaeffer
James F. Percy	Eleanor Seymour
Russell Sands	Leroy B. Sherry
C. N. Suttner	Leon Shulman
F. C. Swearingen	Pierre Viole
Howard L. Updegraff	W. F. Wessels
Harry H. Wilson	C. A. Wright
Delegates	Alternates
H. O. Hund	Marin County (1) J. H. Kuser
W. H. Bingaman	Mendocino County (1) Raymond Babcock
Chester A. Moyle	Merced County (1) Fred O. Lien
M. M. Booth	Monterey County (1) W. M. Gratiot
Dexter R. Ball	Napa County (1) C. A. Johnson
Harry E. Zaiger	Orange County (2) George M. Tralle William S. Wallace
C. C. Briner	Placer County (1) Carl P. Jones
R. L. Hull	Riverside County (2) Thomas A. Card A. L. Bramkamp
Paul F. Thuresson	Sacramento County (3) Edward W. Beach William A. Beattie G. Parker Dillon
S. H. Keller	San Benito County (1) R. W. O'Bannon
D. C. Mock	San Bernardino County (3) W. W. Savage F. F. Abbott D. B. Williams
E. L. Tisinger	San Diego County (5) Andrew J. Thornton George B. Worthington L. W. Zochert Chas. William Brown S. J. McLendon
Walter Pritchard	San Francisco County (18) Philip H. Arnott Elbridge J. Best Walter W. Boardman LeRoy Brooks Harold Brunn Edward C. Bull Howard W. Fleming Henry W. Gibbons Alexander S. Keenan William J. Kerr Alson R. Kilgore Langley Porter George K. Rhodes H. A. L. Ryfkogel Karl L. Schaupp John H. Woolsey Robert R. Newell Frederick H. Rodenbaugh
	Edwin L. Bruck C. L. Callander Elizabeth A. Davis William Doek Randolph G. Flood Mary E. Glover Irving S. Ingber Albert E. Larsen Robert C. Martin Stanley H. Mentzer Lewis Michelson Kasper Pischel I. W. Thorne Edward B. Towne Wm. C. Voorsanger Rodney A. Yoell L. Henry Garland M. R. Ottlinger
	San Joaquin County (2) J. W. Barnes B. J. Powell, Sr.
	G. H. Rohrbacher Margaret Smythe
	San Luis Obispo County (1) H. A. Gallup
	H. S. Walters
	San Mateo County (1) E. F. Ziegelman
	George W. Sevenman
	Santa Barbara County (2) Henry J. Ullman Hugh Feidell
	Wm. J. Mellinger Wm. H. Eaton
	Santa Clara County (3) E. M. Miller A. A. Shufelt George Barry
	C. K. Canelo Dell Lundquist Cletus Sullivan
	Santa Cruz County (1) Percy T. Phillips
	Shasta County (1) Ferdinand Stabel
	Siskiyou County (1) Victor Hart
	Ruth Hart
	Solano County (1) John W. Green
	Sonoma County (1) J. Walter Seawell
	Stanislaus County (1) J. A. Porter
	Tehama County (1) F. J. Bailey
	Tulare County (1) S. S. Ginsberg
	Tuolumne County (1) Wm. L. Hood
	Ventura County (1) John Bardill
	Yolo-Colusa-Glenn County (1) Oscar C. Railsback
	Thomas E. Cooper
	Yuba-Sutter County (1) N. E. Richardson
	P. B. Hoffman



WILLIAM W. HUTCHINSON  
Chairman of Anesthesiology  
Section



HIRAM E. MILLER  
Chairman Dermatology and  
Syphilology Section



ANDREW B. WESSELS  
Chairman Eye, Ear, Nose and  
Throat Section



ERNEST H. FALCONER  
Chairman General Medicine  
Section



LEMUEL P. ADAMS  
Chairman General Surgery  
Section



ROBERT W. WILCOX  
Chairman Industrial Medicine and  
Surgery Section

## MEETINGS, DINNER AND LUNCHEONS

Hours and Places Where Held

### Meetings

**Meetings of the House of Delegates.**—Monday and Wednesday evenings, April 27 and 29, at 8 p. m. in Gold Room, Fairmont Hotel.

#### Council Meetings—Room 126:

First meeting, Sunday, April 26, 8 p. m.  
Second meeting, Monday, April 27, 2:30 p. m.  
Third meeting, Tuesday, April 28, 2:30 p. m.  
Fourth meeting, Wednesday, April 29, 2:30 p. m.  
Fifth meeting, Thursday, April 30, 9:30 a. m.

### General Meetings

Monday, 11 to 12:30 p. m.—Presidential addresses, Gold Room.

Tuesday, 1 to 2:30 p. m.—Addresses by Invited Guest Speakers, Gold Room.

Wednesday, 1 to 2:30 p. m.—Addresses by Invited Guest Speakers, Gold Room.

Thursday, 11:30 a. m. to 12:30 p. m.—Medical Economics meeting.

### General Outline of Various Meetings and Entertainment

April 26-30	Morning Hours	12:30-1 p. m.	1:30-2:30 p. m.	2:30-5 p. m.	8 p. m.
Sunday					Council
Monday April 27	Registration      11-12:30 p. m. General Session	Luncheon		Section Meetings, Council Meeting	First House of Delegates Meeting
Tuesday April 28	9-12 noon Clinics at Stanford and U. C.	Luncheon	General Session (All sections)	Section Meetings, Council Meeting	Reception to the President, Dance
Wednesday April 29	9-12 noon Clinics at Stanford and U. C.	Luncheon	General Session (All sections)	Section Meetings, Council Meeting	Second House of Delegates Meeting
Thursday April 30	9-11:30 a. m. Section Meetings Council Meeting	11:30-12:30 p. m. Economics Meeting (All sections)	Luncheon	Golf Tournament	



GEORGE G. HUNTER  
Chairman Neuropsychiatry  
Section



WILLIAM H. GILBERT  
Chairman Obstetrics and  
Gynecology Section



ERNEST M. HALL  
Chairman Pathology and  
Bacteriology Section



DONALD K. WOODS  
Chairman Pediatrics Section



CHARLES M. RICHARDS  
Chairman Radiology Section



HARRY W. MARTIN  
Chairman Urology Section

## MEETINGS, DINNER AND LUNCHEONS

See Bulletin Boards for Other Announcements

**Organization Meetings of All Standing Committees.**—Members of all Standing Committees should meet in the Lounge early on Thursday morning to organize for the coming year by the election of a chairman and secretary, and appointment of advisory members—and to discuss plans for the next year's work.

### Dinner

**President's Dinner Dance.**—Tuesday evening, Terrace Room and Ballroom, Fairmont Hotel, 7 p. m. Make reservations at registration desk. Dinner tickets, \$3.50.

### Luncheons

**Fraternity Luncheons.**—The San Francisco Graduate Club of *Phi Delta Epsilon* Fraternity cordially invites all fraters attending the convention to attend a buffet supper to be given at the Palace Hotel at 8 p. m., April 29. For further information, see the secretary, A. Bernstein, M.D., 350 Post Street, San Francisco.

There will be a luncheon of *Phi Rho Sigma* Alumni on Tuesday, April 28. Place will be announced on the bulletin board at the registration desk.

## DIAGRAM OF SECTION MEETINGS—FOUR-DAY SESSION

Date	Red Room	Terrace	Gold Room	Vanderbilt Room	Little Theater	California Room	Little Grill	Green Room	Tapestry Room
Mon. April 27 2:30 to 5 p. m.	Joint Meeting Medicine and Pathology	Surgery		Neuropsychiatry	Urology	Obstetrics		Industrial Medicine	Dermatology
Tues. April 28 2:30 to 5 p. m.	Medicine	(Surgery in Gold Room)	Joint Meeting Surgery and Anes.	Pathology	Urology	Pediatrics	Radiology	Industrial Medicine	Dermatology
Wed. April 29 2:30 to 5 p. m.	Joint Meeting Medicine and Pathology	Surgery		Neuropsychiatry	Eye, Ear, Nose and Throat	Gynecology	Radiology	Anesthesiology	Urology
Thurs. April 30 9 to 11:30 a. m.	Medicine	Surgery		Pathology	Eye, Ear, Nose and Throat	Pediatrics	Radiology		

## PROGRAM, HOUSE OF DELEGATES MEETINGS

Gold Room, Fairmont Hotel

### PROGRAM OF FIRST MEETING

**Monday, April 27, 8 p. m.**

Members of the California Medical Association who attend are requested not to take seats reserved for delegates.

#### Order of Business

1. Call to order.
2. Announcement by the Speaker on personnel of:
  - (a) Credentials Committee.
  - (b) Reference Committee on Reports of Officers and of Standing Committees.
  - (c) Reference Committee on Resolutions and on New and Miscellaneous Business.
3. Report of Credentials Committee.
4. Roll Call.
5. Report of President Lyell C. Kinney.
6. Report of the Council, Oliver H. Hamlin, Chairman.
7. Report of the Auditing Committee, T. Henshaw Kelly, Chairman.
8. Report of the Secretary, Emma W. Pope.
9. Report of the Editor, George H. Kress.
10. Report of the General Counsel, Hartley F. Peart.
11. Unfinished business.
12. New business. (Introduction of resolutions.)
13. Reading and adoption of minutes.
14. Adjournment.

\* \* \*

### PROGRAM OF SECOND MEETING

**Wednesday, April 29, 8 p. m.**

Members of the California Medical Association who attend are requested not to take seats reserved for delegates.

#### Order of Business

1. Call to order.
2. Roll Call.
3. Announcement of meeting place of 1932 annual session.

#### 4. Election of:

- (a) President-elect.
- (b) Speaker of House of Delegates.
- (c) Vice-speaker of House of Delegates.
- (d) Councillors.

Third District—Incumbent, Gayle G. Moseley, Redlands (1931).

Sixth District—Incumbent, Walter B. Coffey, San Francisco (1931).

Ninth District—Incumbent, Henry S. Rogers, Petaluma (1931).

Councillors-at-Large—Incumbent:

William H. Kiger, Los Angeles, 1931.  
Edward N. Ewer, Oakland, 1931.

(e) Delegates and Alternates to American Medical Association for sessions 1932-1933.

Incumbents of sessions 1930-1931 are:

Delegates	Alternates
Dudley Smith, Oakland	Joseph Catton San Francisco

F. C. E. Mattison Pasadena	James F. Percy Los Angeles
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Albert Solland, Los Angeles	William H. Gilbert Los Angeles
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Incumbent of sessions 1931-1932 is:

W. E. Stevens (Resigned as alter- nate to Irving S. Ingber, 1931-1932)
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(f) Program Committee for 1931-1934:

Incumbent—Lemuel P. Adams, Oakland.

5. Report of Reference Committee on Reports of Officers and Standing Committees.

6. Report of the Reference Committee on Resolutions and on New and Miscellaneous Business.

7. Presentation of President.

8. Presentation of President-elect.

9. Reading and adoption of minutes.

10. Adjournment.

## GENERAL INFORMATION

**Registration and Information.**—The registration and information desk is located in the lobby, Fairmont Hotel. All persons attending the convention, whether members or not, are requested to register immediately on arrival. Beginning Monday, April 27, registration secretaries will be on duty daily from 9 a. m. until 5 p. m.

**Guests and Visitors.**—All guests and visitors are requested to register. All general meetings and scientific meetings are open to visitors and guests.

**Badges.**—Four kinds of badges will be issued by the registration bureau:

1. Members.—Only active, associate, retired or honorary members of the California Medical Association will be issued the usual membership badge. Members must show membership cards when they register.
2. Guest.—A guest badge will be issued to all fraternal delegates, visiting physicians, wives of members, and technical specialists who are attending the 1931 session.
3. Delegates and Alternates.—The usual official badge for each delegate and alternate is provided for this purpose, and will be issued only to one authorized to wear it.
4. Councillors.—An official badge is provided for all officers and members of the Council.

**Membership Cards.**—Every member in good standing in the California Medical Association has been issued an official membership card for 1931. Membership cards must be shown at the registration desk.

**Suggestions and Constructive Criticism.**—The officers and committees have tried to do everything possible to make the session a success. Suggestions and constructive criticism calculated to make future sessions more useful will be welcomed by any of the officers. Complaints of whatever character should be promptly made to the registration desk, where they will receive attention.

**Social Program.**—The social program is in the hands of the Arrangements Committee, and is published at the end of this program.

**Press Representatives.**—Accredited press representatives are welcome, and they will be accorded every possible courtesy.

**Publicity.**—All publicity is in the hands of a Publicity Committee. It is requested that all persons having matter of "news" value report it to this committee. It is particularly requested that all "news" about any phase of the convention be given out through the official committee, and in no other way.

**Exhibits.**—Only advertisers in California and Western Medicine are permitted to exhibit at the annual session.

## CLINICS

### SURGICAL CLINICS—TUESDAY, APRIL 28, 1931

**9 A. M. to 12 M.**

#### **University of California Hospital Third and Parnassus Avenues**

##### **SYMPOSIUM ON BREAST TUMORS**

1. Anatomical considerations with reference to diagnosis and treatment.—J. Saunders, M. D.
2. Clinical diagnosis.—E. I. Bartlett, M. D.
3. Surgical pathology.  
Demonstration of gross and microscopic material.—R. J. Millzner, M. D.
4. Operative treatment.  
Malignant disease.—H. Glenn Bell, M. D.  
Doubtful and benign tumors.—E. I. Bartlett, M. D.
5. The rôle of x-ray in treatment of malignant disease.—R. Stone, M. D.
- The rôle of radium in treatment of malignant disease.—O. Pfeuger, M. D.
6. End results.—Henry H. Searls, M. D.

#### **Lane and Stanford Hospital Sacramento and Webster Streets**

9:30—Intractable pain of face, mouth, and throat treated by intracranial division of glossopharyngeal and trigeminal nerve.—F. L. Reichert, M. D.

9:50—The Management of Carcinoma of the Prostate.—J. R. Dillon, M. D.

10:10—Congenital Dislocation of the Hip and Legg's Disease.—L. W. Ely, M. D.

10:30—Cardiospasm and Its Relief. Presentation of case.—G. W. Nagel, M. D.

10:50—The treatment of chronic empyema and empyema complicating lung abscess.—E. Holman, M. D.

11:10—Unusual lesions of the cauda equina causing paralysis relieved by operation—Presentation of case.—E. B. Towne, M. D.

### SURGICAL CLINICS—WEDNESDAY, APRIL 29, 1931

**9 A. M. to 12 M.**

#### **University of California Hospital Third and Parnassus Avenues**

1. Thyroid clinic.—Wallace I. Terry, M. D., and Henry H. Searls, M. D.
2. Neurosurgical clinic.—Howard C. Naffziger, M. D., and O. W. Jones, Jr., M. D.
3. Cholelithiasis.—Stanley Mentzer, M. D.

#### **Stanford Hospital Sacramento and Webster Streets**

9:30—Failure in the injection treatment of varicose veins with suggestions for their prevention.—N. J. Howard, M. D.

9:50—Recurring thyroglossal duct cysts and their treatment.—P. K. Gilman, M. D.

10:15—Blood Transfusions (Brooks Method). Presentation of case.—LeRoy Brooks, M. D.

10:40—Sympathetic ramisection for peripheral vascular disease.—F. L. Reichert, M. D.

11:10—Endo-aneurysmorrhaphy for varicose aneurysm.—E. Holman, M. D.

11:30—Osteochondromatosis of knee joint—Mediasinitis following dilatation of the stricture of the esophagus.—Emmet Rixford, M. D.

11:30—The Hitch operation for strabismus—Motion-picture demonstration of new procedure and exhibition of cases.—Hans Barkan, M. D.

#### **San Francisco Hospital Twenty-Second Street and Potrero Avenue**

##### **UNIVERSITY OF CALIFORNIA SERVICE**

1. Fractures of the skull.—Howard C. Naffziger, M. D.
2. Fractures of vertebral bodies.—Ralph Soto-Hall, M. D.
3. Neurological aspects of fractures of vertebral bodies.—Howard Fleming, M. D.
4. Fractures of head of radius.—W. A. Key, M. D.
5. Treatment of Colles' fracture.—F. C. Linde, M. D.
6. Manipulation and skeletal traction in malunited fractures of femur.—Leroy C. Abbott, M. D.
7. Ambulatory treatment in fractures of both bones of the leg.—H. C. Pitkin, M. D.
8. Treatment of compound fractures.—George C. Hensel, M. D.
9. Treatment of ununited fractures—A discussion of bone repair.—K. O. Haldeman, M. D.

#### **San Francisco Hospital Twenty-Second Street and Potrero Avenue**

##### **STANFORD SERVICE**

##### *Emergency Surgery:*

1. Anesthesia in emergency surgery.—J. Cline, M. D.
2. Perforated peptic ulcer—Intestinal obstruction.—E. Butler, M. D.
3. Rupture ectopic pregnancy.—L. Emge, M. D.
4. Appendicitis.—R. L. Chandler, M. D.
5. Empyema.—L. Eloesser, M. D.
6. Suppurative arthritis.—N. J. Howard, M. D.

#### **San Francisco Hospital Twenty-Second Street and Potrero Avenue**

##### **UNIVERSITY OF CALIFORNIA SERVICE**

1. Acute abdomen.—G. K. Rhodes, M. D.
2. Postoperative obstruction.—Harold Brunn, M. D.
3. Some questionable emergencies in children's surgery.—C. L. Callender, M. D.
4. Motion picture—Pulmonary embolectomy.—A. L. Brown, M. D.
5. Acute gall bladder.—Stanley Mentzer, M. D.
6. Abdominal injuries.—Selling Brill, M. D.
7. Urological emergencies.—S. Olsen, M. D.
8. Extra-uterine pregnancy.—Margaret Schulze, M. D.

#### **San Francisco Hospital Twenty-Second Street and Potrero Avenue**

##### **STANFORD SERVICE**

##### *Traumatic Surgery:*

1. Head injuries.—E. J. Morrissey, M. D.
2. Cut throat and chest injuries.—L. Eloesser, M. D.
3. Anesthesia in fractures.—J. M. Meherin, M. D.
4. Fracture dislocation of cervical spine.—E. B. Towne, M. D.
5. Abdominal injuries.—E. Butler, M. D.
6. Gas gangrene and amputation.—L. Eloesser, M. D.
7. Unpadded plaster of paris splints.—P. O'Hara, M. D.

## MEDICAL CLINICS—TUESDAY, APRIL 28, 1931

9 A. M. to 12 M.

University of California Medical School  
Third and Parnassus Avenues

1. Clinic on Hodgkin's disease.—E. M. Falconer, M. D.
2. Three cases of myxedema in women.—Hans Lisser, M. D.
3. The clinical course of pulmonary tuberculosis.—S. J. Shipman, M. D.
4. Clinic on muscular dystrophy.—Milton B. Lennon, M. D.

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San Francisco Hospital  
Twenty-Second Street and Potrero Avenue  
STANFORD SERVICE

1. Amphitheater clinics.

## San Francisco Hospital

Twenty-Second Street and Potrero Avenue  
UNIVERSITY OF CALIFORNIA SERVICE

1. Ward rounds.—Leroy H. Briggs, M. D., Gordon E. Hein, M. D., Raymond J. Reitzel, M. D., and Esther Rosencrantz, M. D.

\* \* \*

Stanford University Medical School  
2389 Sacramento Street

1. Diagnosis and treatment of diseases of heart and kidney.—Thomas Addis, M. D., William Dock, M. D., J. K. Lewis, M. D., and staff.

## MEDICAL CLINICS—WEDNESDAY, APRIL 29, 1931

9 A. M. to 12 M.

University of California Medical School  
Third and Parnassus Avenues

1. Quinidin therapy in cardiac irregularities.—W. B. Kerr, M. D.
2. Adequate treatment of anemia.—S. R. Mettier, M. D.
3. Treatment of diabetes mellitus.—H. Claire Shephardson, M. D.
4. Demonstration of patients with peptic ulcer—Remarks on treatment, surgical indications, relation to malignancy.—Fred H. Kruse, M. D.

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San Francisco Hospital  
Twenty-Second Street and Potrero Avenue  
UNIVERSITY OF CALIFORNIA SERVICE

1. Amphitheater clinics.

## San Francisco Hospital

Twenty-Second Street and Potrero Avenue  
STANFORD SERVICE

1. Ward rounds.—Harold P. Hill, M. D., and staff.

\* \* \*

Stanford University Medical School  
2398 Sacramento Street

1. Diagnosis and treatment of diseases of gastrointestinal tract and gall bladder.—Arthur Bloomfield, M. D., Walter W. Boardman, M. D., and staff.



## GENERAL MEETINGS

All General Meetings will be held in the Gold Room

## FIRST GENERAL MEETING

Monday, April 27, 11 a. m.

1. *Invocation*—
2. *Address by the President*, Lyell C. Kinney, M. D.
3. *Correction of Losses and Deformities of the External Nose, Including Those Associated with Harelip*—Vilray P. Blair, M. D., Professor of Clinical Surgery, Washington University School of Medicine, St. Louis, Missouri.

## SECOND GENERAL MEETING

Tuesday, April 28, 1:30 p. m.

1. *Control of Poliomyelitis From the Point of View of Its Epidemiology*—William Lloyd Aycock, M. D., Department of Preventive Medicine and Hygiene, Harvard University Medical School, Boston, Massachusetts.
2. *Parenchymal and Vascular Disturbances of Kidney Function*—Jean Oliver, M. D., Department of Pathology, Long Island College of Medicine, Brooklyn, New York.

## THIRD GENERAL MEETING

Wednesday, April 29, 1:30 p. m.

1. *Circulatory Changes During Spinal Anesthesia*—Ralph Milton Waters, M. D., Associate Professor of Surgery, University of Wisconsin Medical School, Madison, Wisconsin.
2. *Nephritis and Nephrosis*—Elexius Thompson Bell, M. D., Professor of Pathology, University of Minnesota Medical School, Minneapolis, Minnesota.

## FOURTH GENERAL MEETING

Thursday, April 30, 11:30 a. m.

## MEDICAL ECONOMICS

1. *Address by Chairman*—John H. Graves, M. D., San Francisco.
2. *Some Economic Aspects of Modern Medicine*—Daniel Crosby, M. D., Oakland.
3. *An American Institution Incorporates Social Insurance Medicine*—Rexwald Brown, M. D., Santa Barbara. Discussion opened by Rodney Yoell, M. D., San Francisco.

## SECTION PROGRAMS

See Section Index Below

### **Rules Regarding Papers and Discussions at the State Meeting:**

Upon recommendation of the Executive Committee, the following rules regarding papers have been adopted by the Council:

1. All papers read before a section of an annual session are the property of California and Western Medicine.

2. The maximum time that may be consumed by any paper is fifteen minutes, provided that not to exceed ten minutes' latitude may be allowed invited guests at the discretion of the presiding chairman.

3. The maximum time permitted any individual to discuss a paper is four minutes. This also applies to the author in closing his discussion. No speaker may discuss more than once any one subject. The presiding officer of each section is expected to enforce these rules.

4. A copy of each and every paper presented at the state meeting must be in the hands of the chairman or secretary of the section or in the hands of the general secretary before the paper is presented.

5. All papers read at an annual session of the California Medical Association automatically become the property of the Association (By-Laws, Chapter VI, Section 4). The Committee on Publications of the official publication, California and Western Medicine, decides whether or not the paper submitted is of such nature as to be published in full in California and Western Medicine or in abstract form. (In case the latter procedure is followed, the expense of setting up the type for reprints shall be borne by the Association.) It is also the ruling that when any section has a larger number of papers on its program than can be covered in a two-day session, that not more than the average number of papers from such section shall be printed, unless for special reasons.

6. Articles are accepted for place on the program on condition that they are also contributed **solely** to California and Western Medicine. Authors desiring to publish their papers elsewhere than in the journal must make written request to the state secretary.

7. No paper will be accepted by the General Program Committee nor by Section Program Committees unless accompanied by a synopsis of not to exceed fifty words.

8. Papers shall not be "read by title."

9. No member may present more than one paper at any annual session, provided that a member may be a collaborator on more than one paper, if these papers are presented by different authors.

10. Failure on the part of an author to present a paper precludes acceptance of future papers from such author for a period of two years, unless the author explains to the satisfaction of the Executive Committee his inability to fulfill his obligation.

### **Business Meetings of Sections**

Time of business meetings and elections of officers of sections will be scheduled on section blackboards by section secretaries, and through preliminary announcements by section chairmen.

### **Section Index to This Program** (Sections are arranged alphabetically)

I.—Anesthesiology .....	295
II.—Dermatology .....	296
III.—Eye, Ear, Nose, and Throat .....	297
IV.—General Medicine .....	298
V.—General Surgery .....	300
VI.—Industrial Medicine and Surgery .....	301
VII.—Neuropsychiatry .....	302
VIII.—Obstetrics and Gynecology .....	303
IX.—Pathology and Bacteriology .....	304
X.—Pediatrics .....	305
XI.—Radiology .....	306
XII.—Urology .....	306

### I

### **ANESTHESIOLOGY SECTION**

WILLIAM W. HUTCHINSON, M. D., *Chairman*

1202 Wilshire Medical Building  
1930 Wilshire Boulevard, Los Angeles

MARY E. BOTSFORD, M. D., *Secretary*  
807 Francisco Street, San Francisco

**First Meeting—Gold Room**  
**Joint Meeting of General Surgery and**  
**Anesthesiology Sections**

**Tuesday, April 28, 2:30 to 5 p. m.**

1. **Carbon Dioxide Absorption in Anesthesia**—Ralph M. Watters, M. D., University of Wisconsin, Madison. (By invitation)

Description and illustration (slides) of a technique for its accomplishment. Ten years' experience with the method. Disturbed physiology through loss of heat and moisture prevented by this method. Control of anesthesia and oxygen supply simplified, made safer, and less expensive. Application in oxygen administration accompanying block, rectal, and other techniques.

2. **Preoperative Medication—Clinical Results at Stanford University Hospital**—Caroline B. Palmer, M. D., 2401 Sacramento Street, San Francisco.

Consideration of each of three objects of pre-liminary medication, viz., to prevent psychic shock; to improve the course of anesthesia; and to better the postoperative condition of the patient. Methods employed at Stanford University Hospital. General clinical results. Charts, statistics and lantern slides.

3. **The Significance of Oxygen Want in Anesthesia**—Chauncey D. Leake, Ph. D., University of California Hospital, San Francisco. (By invitation)

Physiological factors in oxygen want: physiological effects of oxygen want. Respiratory gaseous exchange in anesthesia. Symptoms, prophylaxis and relief of anoxemia. Evidence of reduced intracellular oxidation in anesthesia; prophylaxis and treatment.

4. **Modern Concepts of Spinal Anesthesia**—Franklin I. Harris, M. D., 916 Four Fifty Sutter Street, San Francisco.

A brief historical review to illustrate the development of the principles of controllable spinal anesthesia. Height of anesthesia controlled by volume of spinal fluid. Duration by dosage of novocain. The value of ephedrin in this form of anesthesia disagrees with the views expressed by other writers as to its danger; contraindications to the use of this form of anesthesia, and discussion of fatalities.

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### **Second Meeting—Green Room**

**Wednesday, April 29, 2:30 to 5 p. m.**

1. **Chairman's Address—Anesthesia as a Medical Specialty**—William W. Hutchinson, M. D., Los Angeles.

2. **Effects of Posture During Anesthesia**—Adena C. Dutton, M. D., 1955 Broadway, San Francisco.

A detailed consideration of the operative positions in common use. Certain positions that may be modified to increase relaxation and add to the patient's comfort. Certain positions that

necessarily add difficulties. Methods of overcoming these as far as is possible. Dangers of changes of posture. (Lantern slides.)

3. *Records of Anesthesia for Brain Surgery Covering Ten Years*—Dorothy A. Wood, M. D., 1390 Seventh Avenue, San Francisco.
- Preoperative preparation. Technique of administration. The management of the anesthesia. Types of operations performed. Emergency measures used. Postoperative complications.
4. *A Comparison of Methods of Resuscitation of the New-Born*—Ethel Righetti, M. D., 319 Walnut Street, San Francisco.
- Manual methods of artificial respiration. Hot and cold water immersion. Expansion of lungs by mouth-to-mouth expiration. Alpho-lobelin-carbon dioxide oxygen Drinker respirator. Treatment of atelectasis.



## II

### DERMATOLOGY AND SYPHILIOLOGY SECTION

HIRAM E. MILLER, M. D., *Chairman*  
803 Fitzhugh Building, 384 Post Street  
San Francisco

CHARLES R. CASKEY, M. D., *Vice-Chairman*  
715 Wilshire Medical Building  
1930 Wilshire Boulevard  
Los Angeles

NORMAN N. EPSTEIN, M. D., *Secretary*  
1304 Four Fifty Sutter Street  
San Francisco

MERLIN T. MAYNARD, M. D.  
*Chairman, Section Program Committee*  
408 Medico-Dental Building, San Jose

**First Meeting—Tapestry Room**  
**Monday, April 27, 2:30 to 5 p. m.**

1. *Chairman's Address*—Hiram E. Miller, M. D., San Francisco.
2. *Trichophytid as a Clinical Conception*—Moses Scholtz, M. D., 715 Wilshire Medical Building, 1930 Wilshire Boulevard, Los Angeles.
- Concept of trichophytid must be checked up by: (1) immunologic; (2) bacteriologic; (3) morphologic; and (4) clinical findings. Clinical significance of trichophytids. Trichophytids versus other ids, such as tuberculids, leukemids, syphilids, etc. Pathogenesis of trichophytid. Clinical diagnosis of tinea versus laboratory analysis of a personal series of cases.
- Discussion opened by Samuel Ayres, Jr., M. D., Los Angeles.
3. *Keratosis Blennorrhagica*—George F. Koetter, M. D., 812 Medical Office Building, 1136 West Sixth Street, Los Angeles, and Stanley O. Chambers, M. D., 1260 Roosevelt Building, 727 West Seventh Street, Los Angeles.
- A complete study of this disease. Three avenues of investigative approach; the relation of the disease to gonorrhea; a study of the histogenesis; the observation and demonstration of mucous membrane lesions and the demonstration of cutaneous sensitivity. Four separate showers of cutaneous and mucous membrane lesions were observed which permitted thorough investigation.
- Discussion opened by Howard Morrow, M. D., San Francisco.

4. *Infectious Granulomata*—H. P. Jacobson, M. D., Westlake Professional Building, 2007 Wilshire Boulevard, Los Angeles.

The infectious granulomata frequently constitute confusing diagnostic problems, clinically as well as from the standpoint of the laboratory. Contrary to textbook teachings, their mycological or bacteriological diagnoses frequently present laboratory difficulties, the solution of which require perseverance, patience, and training. Therapeutically a great many of these cases lend themselves successfully to proper treatment if the diagnosis is established early.

Discussion opened by H. C. L. Lindsay, M. D., Pasadena.

5. *The Patch Test*—John M. Graves, M. D., 430 Medical Building, 909 Hyde Street, San Francisco.

What the patch test is; its application in dermatologic diagnosis; clinical criteria; case reports.

Discussion opened by N. N. Epstein, M. D., San Francisco.

6. *Colored Moving Picture Demonstration of Dermatologic Cases*—C. Ray Lounsberry, M. D., 1111 Medico-Dental Building, 233 A Street, San Diego.

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**Second Meeting—Tapestry Room**  
**Tuesday, April 28, 2:30 to 5 p. m.**

1. *Triethanolamin as Adjunct to Dermatological Therapy*—Merlin T. R. Maynard, M. D., 407 Medico-Dental Building, San Jose.

Very little advantage of the immense field of organic chemicals has been taken by dermatologists in seeking to increase penetration of ointments through lowering surface tension. Triethanolamin was used; it was found that it reacted both favorably and unfavorably with other chemicals, and some useful combinations were evolved.

Discussion opened by H. E. Alderson, M. D., San Francisco.

2. *Persistent Nodules in Scabies—Histologic Studies and Treatment*—Samuel Ayers, Jr., M. D., and Nelson P. Anderson, M. D., 315 Westlake Professional Building, Los Angeles.

Three cases of scabies are reported in which inflammatory nodules, especially on the genitals, abdomen and buttocks, persisted in spite of adequate, and even repeated, antiparasitic treatment. Histologic studies, photographs, and photomicrographs are presented, together with suggestions for the treatment of this atypical manifestation of scabies. (Lantern slides.)

Discussion opened by Douglas W. Montgomery, M. D., San Francisco.

3. *The Treatment of Vitiligo*—H. C. L. Lindsay, M. D., 54 North Madison Avenue, Pasadena.

Vitiligo treatment must be directed at the cause; fungus cases, specific cases, lichen cases, psoriatic cases are easier to cure than allergic cases. Cases definitely due to sunlight do not all respond to gold sodium thiosulphate therapy. Nearly all cases can be relatively improved by some method. Toxicity of gold does not debar its use in leukoderma.

Discussion by Samuel Ayers, M. D., Los Angeles, and H. J. Templeton, M. D., Oakland.

4. *Favus in California*—Stuart C. Way, M. D., 320 Medico-Dental Building, 490 Post Street, San Francisco.

A case report with photographs of the skin lesions and microphotographs of the fungus.

Discussion opened by Harry E. Alderson, M. D., San Francisco.

5. *Eczema Solare Associated with Hematoporphyrinuria*  
—H. J. Templeton, M. D., and C. J. Lunsford,  
M. D., 3115 Webster Street, Oakland.

A study of two patients who presented eczema as a result of light sensitization associated with hematoporphyrinuria. Also a study of normal controls and of nonlight sensitive patients in whom hematoporphyrinuria was produced by ultra-violet light irradiation.

Discussion opened by Nelson P. Anderson, M. D., Los Angeles.

#### Special Notice to Section Members

Demonstration of selected dermatological and syphilis cases at the skin and syphilis clinic, Stanford University Medical School (corner Sacramento and Clay streets, opposite Lane Medical Library). By Harry E. Alderson, M. D., Stuart C. Way, M. D., and Merlin T. Maynard, M. D.



#### III

#### EYE, EAR, NOSE, AND THROAT SECTION

ANDREW B. WESSELS, M. D., *Chairman*  
1305 Medico-Dental Building  
233 A Street, San Diego

ISAAC H. JONES, M. D., *Vice-Chairman*  
1414 Wilshire Medical Building  
1930 Wilshire Boulevard, Los Angeles

FREDERICK C. CORDES, M. D., *Secretary*  
817 Fitzhugh Building, 384 Post Street  
San Francisco

First Meeting—Little Theater  
Wednesday, April 29, 2:30 to 5 p. m.

#### SYMPOSIUM ON THE EIGHTH NERVE

1. *Anatomy of the Eighth Nerve*—J. B. Saunders, M. D., Department of Anatomy, University of California, Berkeley. (By invitation.)
2. *The Rôle of Labyrinthine Reflexes in Postural Tonus and Locomotion in the Experimental Animal*—Joseph C. Hinsey, Ph. D., Department of Anatomy, Stanford University. (By invitation.)  
Locomotion in the experimental animal (cat) has been shown to consist of at least three components: (1) postural tonus; (2) rhythmicity; and (3) equilibration. The vestibular mechanism is involved in postural tonus and equilibration. A consideration of the anatomical pathways for these two components will be made in the light of some of the recent investigations upon the subject.
3. *Pathology of the Eighth Nerve*—Robert C. Martin, M. D., 620 Fitzhugh Building, 384 Post Street, San Francisco.
4. *Surgery of the Eighth Nerve*—George H. Patterson, M. D., 402 Professional Building, 1052 West Sixth Street, Los Angeles.  
Historical review, pointing out how the tumors arising from the eighth nerve can be differentiated from others within this region. Histology. Symptomatology and diagnosis. Pathologic anatomy. Surgical procedures for the removal of tumors of the eighth nerve. Operative results, including case reports of the methods employed by various operators.
5. *The Optic Nerve and the Auditory Nerve, Their Analogies and Differences, with Preliminary Con-*

ceptions of the "Choked Labyrinth"—Clifford B. Walker, M. D., 410 Auditorium Building, 427 West Fifth Street, Los Angeles.

One finds repeatedly in ophthalmologic, otologic, and neurologic literature references to certain various analogies between the second and eighth nerves which are helpful in analyzing many problems. Therefore, for the first time, an attempt is made to collect some of these analogies—at least those referring to the pressure phenomena of glaucoma and brain tumor.

Discussion of symposium to be opened by Howard Naffziger, M. D., San Francisco and Isaac H. Jones, M. D., Los Angeles.

*Notice: A demonstration of oral teaching to the deaf children* will be held at the Gough School, Washington Street, between Franklin and Gough streets, on Wednesday, April 29, from 10 to 11:30 a. m. (See full notice at end of second meeting.)

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#### Second Meeting—Little Theater

Thursday, April 30, 9 to 11:30 a. m.

#### CLINICAL SYMPOSIUM ON THE OPTIC NERVE

1. *Recent Advances in Pharmacology Relating to the Eye*—Chauncey D. Leake, Ph.D., Department of Pharmacology, University of California Medical School, San Francisco.

Sensitivity of highly specialized tissue to alterations in chemical environment. Drugs used for various purposes which may interfere with vision; by tissue injury; by physiological action. Development of chemicals for use in ophthalmology: local anesthetics; "sympathomimetic amines"; mydriatics and miotics; anti-septics.

2. *Rhinological Aspects of Retrobulbar Neuritis*—Harold A. Fletcher, M. D., 1417 Medico-Dental Building, 490 Post Street, San Francisco.

Discussion of anatomic and physiologic relations of the paranasal sinuses to the optic nerve. Based on the present-day understanding of the part the nasal sinuses may play in this disease and the well known fact that the rhinoscopic examination may be negative. The clinical judgment as to whether or not the sinuses should be attacked surgically in a given case must come from the ophthalmologist, who must take the responsibility of ruling out other causes of the neuritis.

3. *Injuries to the Optic Nerves and Visual Tracts*—Howard W. Fleming, M. D., 419 Fitzhugh Building, 384 Post Street, San Francisco.

Anatomical considerations—injuries to optic nerve complicating foraminal and clinoid fractures—*injury to visual tracts*, due to penetrating wounds, depressed fractures, hemorrhage, and abscess. Impaired visual acuity and constricted fields, resulting from cerebral concussion. (Lantern slides.)

4. *Clinical Relations of the Anatomy and Pathology of the Optic Nerve*—Morie F. Weymann, M. D., 903 Westlake Professional Building, 2007 Wilshire Boulevard, Los Angeles.

This paper is limited to a discussion of the intraorbital and intraocular portion of the optic nerve. A review of the microscopic anatomy of the nerve head explains the various appearances of the optic disk as seen with the ophthalmoscope. Sections through the diseased nerve demonstrate the ophthalmoscopic changes produced in papilledema, atrophy, and other conditions.

5. *Optic Nerve Changes in Nontraumatic Neurologic Disorders*—Walter F. Schaller, M.D., 608 Medical Building, 909 Hyde Street, San Francisco.

Incidence, diagnosis, and prognosis of optic nerve changes in neurologic disorders. Personal experience of the author in a review of case records over a twenty-year period, with special reference to the more common neurologic conditions, such as brain tumor, brain abscess, tabes, multiple sclerosis, and encephalitis.

Discussion of symposium to be opened by A. Ray Irvine, M.D., Los Angeles.

#### Special Notices to Section Members

##### 1. Demonstration of Teaching Handicapped Children.

Dr. William C. Hassler, health officer of the city of San Francisco, invites the members of the Eye, Ear, Nose, and Throat Section to attend a demonstration of teaching handicapped children.

A demonstration of oral teaching to the deaf children will be held at the Gough School, Washington Street, between Franklin and Gough streets, on Wednesday, April 29, from 10 to 11:30 a.m.

A demonstration of the work of the sight-saving classes will be held at the Sanchez School, Sanchez and Seventeenth streets, on Thursday, April 30, from 1:30 to 3 p.m.

Transportation to the schools from the Fairmont Hotel and return will be supplied by the Yellow Cab Company.

The fare to the Gough School, one way, is from 45 to 55 cents and to Sanchez School, from 85 to 95 cents. Similar fare return. Five persons can ride for the cost of one.

Those intending to visit the Gough School will kindly sign up at main registration desk. Demonstrations under the supervision of Dr. Frank H. Rodin.

##### 2. Informal Buffet Supper—Wednesday Evening.

An informal buffet supper and Jinks is being arranged for members of the Eye, Ear, Nose, and Throat Section on Wednesday evening, April 29. Postcards will be sent Section members later, giving the exact time and place. In the meantime, please reserve this date.



## IV

### GENERAL MEDICINE SECTION

ERNEST H. FALCONER, M.D., Chairman  
316 Fitzhugh Building, 384 Post Street  
San Francisco

VERNE R. MASON, M.D., Secretary  
838 Pacific Mutual Building  
523 West Sixth Street, Los Angeles

WALTER P. BLISS, M.D.  
Chairman, Section Program Committee  
407 Professional Building  
65 North Madison Avenue, Pasadena

**First Meeting—Red Room**  
**Joint Meeting of Pathology and Bacteriology**  
**and General Medicine Sections**  
**Monday, April 27, 2:30 to 5 p. m.**

1. *Test for Rapid Detection and Titration of Immune Bodies in Poliomyelitis*—Frederick Eberson, M.D., and W. E. Mossman, M.D. (by invitation), Mount Zion Hospital, San Francisco.

This colloidal gold method detects and measures specific antibodies and protective value in poliomyelitis of human and animal serums. It

makes possible the measure of immunity and recognition of the earliest development of antibodies in the course of infection as shown in patients and monkeys. The test is applicable to the study of carriers, contacts, and susceptibility in poliomyelitis and therapeutical value of serums from human and animal sources. Serums from animals that are naturally refractory to poliomyelitis have been found by this test to possess abundant antibodies.

Discussion opened by W. Lloyd Aycock, M.D., Boston, Massachusetts.

2. *The Kahn Precipitation Test for Syphilis Compared with the Kolmer Modification of the Wassermann Test in Untreated Primary Darkfield Positive Syphilis*—Stanley O. Chambers, M.D., 1260 Roosevelt Building, 727 West Seventh Street, Los Angeles.

A comparison of the Kolmer modification of the Wassermann reaction and the Kahn precipitation test in early darkfield positive sero-negative untreated syphilis. The twenty-five cases observed show an alarming variation in the relation of the positive reaction to time element. Study not offered as conclusive evidence of the desirability of one serologic test over another, but presented as a recitation of observations which warrant further investigation.

Discussion opened by Newton Evans, M.D., Los Angeles.

3. *Periarteritis Nodosa with Remission of Symptoms*—W. E. R. Schottstaedt, M.D., 1759 Fulton Street, Fresno.

A brief résumé of the literature of the different types of periarteritis nodosa with their symptomatology. A case with cutaneous symptoms is reported, with biopsy, photomicrographs and symptoms given. The specific treatment given is outlined and the case is arrested.

Discussion to be opened by Z. E. Bolin, M.D., San Francisco.

4. *Anterior Pituitary Hormone in Urine—A Rapid Method for the Diagnosis of Early Pregnancy*—Morris H. Silverberg, M.D., Union Square building, 350 Post Street, San Francisco.

Over two hundred cases thus far studied have proved 100 per cent accurate by this method which concentrates the active hormone in urine used for injecting one or two small doses intraperitoneally or subcutaneously into immature female rats. Results are reported within thirty-six hours or sooner from gross and microscopic findings. Uterine and ectopic pregnancies can be differentiated from simulating conditions. Hitherto unreported microscopic findings make possible the diagnosis of dead fetus or other abnormalities arising during gestation. Numerous instances of three to five weeks' pregnancy have been detected readily.

Discussion opened by Herbert Evans, M.D., Berkeley.

5. *Spontaneous Nephritis in the Rabbit*—F. R. Nuzum, M.D., and Albert H. Elliott, M.D., Cottage Hospital, Santa Barbara.

Twenty rabbits selected from 250 normal animals because of spontaneous persistent urinary abnormalities were studied over a three-year period from the standpoint of changes in the blood metabolites, phthalein excretion and, particularly blood pressure levels. The effects of a liver diet on the spontaneous nephritis were determined.

Discussion opened by William Ophüls, M.D., San Francisco.

**Second Meeting—Red Room**  
**Tuesday, April 28, 2:30 to 5 p. m.**

1. *Cardiovascular Tests in the Adolescent Girl—An Index of Cardiac and Physical Efficiency*—Katherine M. Close, M. D., 600 Professional Building, 1052 West Sixth Street, Los Angeles.

The cardiovascular response to exercise in 375 girls. Reactions which constitute a normal response. Abnormal responses and their relation to definite pathology. (Charts.)

Discussion opened by John C. Ruddock, M. D., Los Angeles.

2. *Etiology and Treatment of Chronic Bronchiectasis*—J. Dwight Davis, M. D., 802 Wilshire Medical Building, 1930 Wilshire Boulevard, Los Angeles.

Finding of an organism in the bronchial mucosa, by bronchoscopic examination, and its isolation in pure culture. Medical treatment and the results obtained to date is reviewed, and compared with vaccine treatment by this particular organism, isolated.

Discussion opened by Harold Brunn, M. D., San Francisco.

3. *Testicular Substance Implantations*—L. L. Stanley, M. D., State Prison, San Quentin.

For past eleven years, effects of implanting fresh ground-up testicular substance from animal into man have been observed at California state prison at San Quentin. Noticeable dynamic effects, as well as improvement of the general health of the recipients have been observed. About five thousand implantations have been done.

Discussion opened by Hans Lisser, M. D., San Francisco.

4. *Recent Successes in the Medical Treatment of Tic Douloureux*—Mark A. Glaser, M. D., 1118 Roosevelt Building, 727 West Seventh Street, Los Angeles.

In 1916, trichlorethylene was suggested as a therapeutic measure for tic douloureux. Since its introduction, 177 cases have been reported in the literature with varied percentages of successes; fifteen of these cases from the personal experience of the author are herein reported. A résumé of the literature will be considered with a statistical study of cures. Medical treatment offers distinct advantage over surgery. Should the medical treatment fail, surgery will afford 100 per cent relief of pain with the remarkably low mortality of only 37 per cent.

Discussion by Carl W. Rand, M. D., Los Angeles, and Howard Naffziger, M. D., San Francisco.

5. *Intragastric Photography and Its Clinical Application*—Felix Cunha, M. D., Four Fifty Sutter Street, San Francisco. (Motion picture.)

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**Third Meeting—Red Room**  
**Joint Meeting of General Medicine and Pathology and Bacteriology Sections**  
**Wednesday, April 29, 2:30 to 5 p. m.**

The program of this joint meeting is printed under the third meeting of the Pathology and Bacteriology Section. See page 304.

**Fourth Meeting—Red Room**  
**Thursday, April 30, 9 to 11:30 a. m.**

1. *An Evaluation of Quinidin Therapy in Auricular Fibrillation—Its Use Over a Six-Year Period*—Harry Spiro, M. D., and William W. Newman, M. D., 601 Flood Building, 870 Market Street, San Francisco.

A follow-up on sixty-six cases in private practice with an attempt to determine if the use of quinidin in the treatment of auricular fibrillation is really worth while.

Discussion opened by William J. Kerr, M. D., San Francisco.

2. *Acute Idiopathic Hematoporphyrinuria—Report of Three Cases*—Eugene Ziskind, M. D., 718 Professional Building, 1052 West Sixth Street, Los Angeles.

A report of three cases of acute idiopathic hematoporphyrinuria confirmed by spectroscopic examination. Necropsy in each case. General discussion.

Discussion opened by Herbert C. Moffitt, M. D., San Francisco.

3. *Amebiasis—Case Comparing Various Amebacides*—Hamilton H. Anderson, M. D. (by invitation), and Alfred C. Reed, M. D., University of California Hospital, San Francisco.

Difficulties encountered with various drugs proposed for treatment of amebiasis. In this case full courses of "Kurchi alkaloids," "auremetine," emetin hydrochlorid, acetarson, and chiniofon were used without effect. Following 12 grams of "carbarsone" (a new organic arsenical) in divided oral doses, the patient has been symptom-free and negative for *E. histolytica* for three months.

4. *Some Cardiac Arrhythmias Associated with Coronary Artery Occlusions*—William H. Leake, M. D., 216 Wilshire Medical Building, 1930 Wilshire Boulevard, Los Angeles.

Seventeen cases of coronary thrombosis are discussed. An electrocardiogram was obtained in each case within a relatively short time after the occlusion. All of these patients died and were subjected to necropsy. Abnormal rhythms were observed in eleven of this series; the so-called "Coronary T Wave" was present in the electrocardiograms of a similar number.

5. *Potassium in Certain Cardiac Arrhythmias*—John J. Sampson, M. D., 1530 Medico-Dental Building, 490 Post Street, San Francisco, and Evelyn M. Anderson, M. D., University of California Hospital, San Francisco. (By invitation.)

Potassium salt administration by mouth is effective in checking auricular and ventricular ectopic beats and tachycardia in the majority of cases of organic heart disease. The failure to affect arrhythmias in patients without other evidence of cardiac pathology may be used to differentiate this group from the former. Potassium administration does not prevent the occurrence of auricular fibrillation.

Discussion opened by William Dock, M. D., San Francisco.

6. *Enlargement of the Left Auricle to the Right—Its Clinical Significance*—John C. Ruddock, M. D., 909 Wilshire Medical Building, 1930 Wilshire Boulevard, Los Angeles.

Review of literature and hospital records with report of cases and an example of extreme case, with clinical history, physical signs, roentgen-ray pictures, and autopsy findings. A discussion of clinical significance in regard to proper interpretation of roentgen-ray heart films in compensated and decompensated cases of mitral stenosis. (Lantern slides.)

## V

## GENERAL SURGERY SECTION

LEMUEL P. ADAMS, M. D., *Chairman*  
Strad Building, 230 Grand Avenue, Oakland

CLARENCE E. REES, M. D., *Secretary*  
2001 Fourth Street, San Diego

STANLEY H. MENTZER, M. D., *Assistant Secretary*  
1009 Four Fifty Sutter Street, San Francisco

**First Meeting—Terrace Room**  
**Monday, April 27, 1:30 to 5 p. m.**

1. *Unusual Case of Nonunion of Tibia*—Alfred Edward Gallant, M. D., 1033 Roosevelt Building, 727 West Seventh Street, Los Angeles.

Report of a case of delayed union of tibia, which had been operated upon eight times in seven years with persistence of nonunion; the probable causes of nonunion in this instance discussed. Union finally established; method. Excision of a portion of the fibula, and weight bearing afterward, accomplished this result. (Lantern slides.)

Discussion by Leo Eloesser, M. D., San Francisco, and Rodney Atsatt, M. D., Santa Barbara.

2. *Fractures of the Os Calcis*—Maynard C. Harding, M. D., 700 Electric Building, 861 Sixth Street, San Diego.

These constitute about one per cent of all fractures. Classification given. Seriousness of smash fractures. Causes of disability. Pathology. X-ray diagnosis. Methods of treatment. Results.

Discussion by Frazer L. Macpherson, M. D., San Diego.

3. *Treatment of Abscesses in Pott's Disease of the Spine*—Leo Eloesser, M. D., 1224 Medico-Dental Building, 490 Post Street, San Francisco.

Diagnosis and effects of abscess formation in Pott's disease are discussed. Treatment by incision and rib resection in high abscesses; by a lumbar incision in low abscesses, followed by evacuation of pus; removal of tuberculous sequestra and closure of the wound is described. Presentation of patients.

Discussion by John C. Wilson, M. D., Los Angeles, and LeRoy Abbott, M. D., San Francisco.

4. *Penetrating Wounds of the Chest*—Howard W. Stephens, M. D., and S. Cohn, M. D. (by invitation), Fitzhugh Building, 384 Post Street, San Francisco.

The physiology of the thorax is generally considered; the resultant disturbances from open pneumothorax and hemothorax are described and explained. Hemothorax is further discussed rather completely. The indications for operation and the treatment of penetrating injuries are given. The paper is concluded by a study of the cases at the San Francisco Hospital during the past ten years. Conclusions are drawn and comparisons with others given.

Discussion by Frank S. Dolley, M. D., Los Angeles.

5. *The Treatment of Chronic Nontuberculous Empyema*—Charles D. Lockwood, M. D., 295 Markham Place, Pasadena.

The problem of chronic empyema presents many difficulties. There is no standardized procedure. It is possible to secure healing in all nontuberculous cases. Every patient must be studied individually before attempting surgical treatment. Most individuals suffering from long-standing infection have damaged kidneys and

low resistance. Diagnostic procedure: Preparation of patient. Surgical operations necessary for cure. (Lantern slides.)

Discussion by Charles M. Fox, M. D., San Diego, and W. C. Chidester, M. D., San Mateo.

6. *Lengthening of the Tibia and Fibula*—LeRoy C. Abbott, M. D., 2000 Van Ness Avenue, San Francisco.

Author's method for operative lengthening of tibia and fibula. The procedure has been employed in children where a major amount of shortening caused by infantile paralysis and diseases of the hip or knee has led to serious disability. (Motion picture film.)

Discussion by John Wilson, M. D., Los Angeles, and George Sanderson, M. D., Stockton.

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**Second Meeting—Gold Room**  
**Joint Meeting of General Surgery and Anesthesiology Sections**

**Tuesday, April 28, 2:30 to 5 p. m.**

The program of this joint meeting is printed under the first meeting of the Anesthesiology Section. See page 295.

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**Third Meeting—Terrace Room**  
**Wednesday, April 29, 2:30 to 5 p. m.**

1. *Acute Surgical Conditions Encountered in the San Francisco Emergency Hospital Service During a Ten-Year Period*—Edmund Butler, M. D., 615 Medico-Dental Building, 490 Post Street, San Francisco.

The number and classification of patients admitted. Anesthesia: local, spinal, general inhalation. Pathology encountered. Complications following operation. Errors in diagnosis. Mortality report.

2. *Group Treatment of Chronic Polyarthritis*—Rea Smith, M. D., 1215 Wilshire Medical Building, 1930 Wilshire Boulevard, Los Angeles.

Our conception of the etiology of polyarthritis being metabolic—due to disturbance of colon digestion—due to unbalanced flora, dependent upon lack of cecal function and stasis. No one system of treatment cures on account of the many elements involved, necessitating routine combination of radiology, laboratory, abdominal surgery, medical treatment, diet, and physiotherapy followed by expert orthopedic procedure to restore function to crippled joints after the active process has subsided.

Discussion by James T. Watkins, M. D., San Francisco, and Ernest C. Fishbaugh, M. D., Los Angeles.

3. *Why the Success or Failure of Free Skin Grafts*—J. Homer Woolsey, M. D., 907 Medico-Dental Building, 490 Post Street, San Francisco.

The successful transplantation of skin depends upon the establishment of an adequate blood supply. Measures to insure this are: proper cutting atraumatic technique, and the employment of a proper type of dressing.

Discussion by William Kiskadden, M. D., Los Angeles, and John H. Breyer, M. D., Pasadena.

4. *The Management of Depressed Fractures of the Skull with Dural Injury*—Howard C. Naffziger, M. D., University of California Hospital, San Francisco.

The pathologic changes in the brain are due to immediate injury rather than to the continuing depression of the bone. With dural injury brain damage usually occurs. Procedures to minimize the formation of scar are necessary.

A dural opening, whether caused by a tear from injury or made intentionally by the surgeon, needs careful repair to prevent brain protrusion, fungus formation, and scar. Convulsive states often follow incorrect management.

Discussion by Rexwald Brown, M. D., Santa Barbara.

5. *Technique of Abdominal Section Without Postoperative Pain or Adhesions*—James F. Percy, M. D., 1030 South Alvarado Street, Los Angeles.

The principal cause of postoperative pain and adhesions following abdominal section is trauma to the peritoneal endothelial cells. The paper describes a very simple technique for avoiding this. In addition, emphasis is made as to the proper placing of a long, dry abdominal sponge for the restoration of the function of the diaphragm which is always put out of commission the instant the abdomen is opened.

Discussion by Burns Chaffee, M. D., Long Beach.

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#### Fourth Meeting—Terrace Room

Thursday, April 30, 9 to 11:30 a. m.

1. *Cardiospasm*—John Hunt Shephard, M. D., 608 Medico-Dental Building, San Jose.

Cardiospasm, frequently spoken of as idiopathic dilatation of the esophagus, was first described in 1874. Though its symptoms are often pathognomonic, it is frequently overlooked. Probably over two hundred unrecognized cases in California today. Medical treatment is unsuccessful; gastrostomy is rarely indicated. Hydrostatic dilatation is very successful.

Discussion by Gunther Nagel, M. D., San Francisco, and Frederick A. Speik, M. D., Los Angeles.

2. *Partial Gastric Resection*—E. Eric Larson, M. D., 310 Wilshire Medical Building, 1930 Wilshire Boulevard, Los Angeles.

The surgical treatment of gastric and duodenal ulcer is controversial. When gastric resection must be resorted to, the decision must rest with the well-trained surgeon when the lesion is seen at operation. The types of lesions requiring resection, the method of operation, and the after-care of the patient are discussed. (Lantern slides.)

Discussion by C. G. Toland, M. D., Los Angeles; C. T. Sturgeon, M. D., Los Angeles; and John C. Ruddock, M. D., Los Angeles.

3. *Cause of Inguinal Hernia*—Philip H. Stephens, M. D., 103 Medical Office Building, 1136 West Sixth Street, Los Angeles.

Our excuse for presenting a rather hackneyed subject is: The growing importance from a lay and medico-legal standpoint. The history, anatomical and embryological, along with mechanical force and posture incident to production. The evaluation of the rôle of trauma in production. The importance and clear understanding as to the nature of certain types of trauma, the history and circumstances surrounding the beginning and development.

Discussion by Gunther Nagel, M. D., San Francisco, and Wallace Roblee, M. D., Riverside.

4. *Recent Advances in the Treatment of Goiter*—Carl L. Hoag, M. D., 702 Fitzhugh Building, 384 Post Street, San Francisco.

Classification. Evidence for origin. Prevention of goiter. Diagnosis of borderline and mixed types. Iodin therapy. How does iodin act chemically and pathologically? X-ray and radium

therapy. Important points in operative technique. Hypoparathyroidism. Symptom complex—operative precautions. Blood calcium determinations and their importance and significance. Summary.

5. *Goiter—Principles of Treatment*—A. B. Cooke, M. D., 1236 Roosevelt Building, 727 West Seventh Street, Los Angeles.

Individualization of cases. Accuracy of diagnosis. Recognition of fact that goiter is to be considered both a medical and surgical disease. The limitations of nonsurgical treatment. What may be expected from surgical treatment.

6. *Chronic Thyroiditis*—W. Whitfield Crane, M. D., 701 Wakefield Building, Oakland.

Study based on twenty-eight cases at Mayo Clinic. Clinical symptomatology and objective findings as distinguished from the various types of goiter. Gross and microscopic pathologic changes. Importance of the clinical and surgical recognition of thyroiditis because of myxedema following resection of the gland. Cuneiform division of the isthmus the procedure of choice. Operative results. (Lantern slides.)

Discussion by Wallace I. Terry, M. D., San Francisco; Guido Frederick Norman, M. D., Eureka; Joseph K. Swindt, M. D., Pomona; Verne C. Hunt, M. D., Los Angeles; and Schuyler Pulford, M. D., Woodland.



#### VI

### INDUSTRIAL MEDICINE AND SURGERY SECTION

ROBERT W. WILCOX, M. D., *Chairman*  
114 East Seventh Street, Long Beach

FRASER L. MACPHERSON, M. D., *Secretary*  
610 Medico-Dental Building  
233 A Street, San Diego

FLOYD THURBER, M. D.  
*Chairman, Program Committee*  
214 Hollywood First National Bank Building  
Los Angeles

#### First Meeting—Green Room

Monday, April 27, 2:30 to 5 p. m.

1. *Treatment of Compression Fractures of the Spine with the Rogers Hyperextension Frame*—Charles B. Fowler, M. D., Franklin Building, 1624 Franklin Street, Oakland.

Object in presenting the paper: types of beds; mechanics of correction; outline of treatment; a few cases treated. (Lantern slides.)

2. *Removal of Semilunar Cartilages from the Knee Joint—Analysis of Late Results*—George J. McChesney, M. D., 2537 Four Fifty Sutter Street, San Francisco.

Discussion of reasons why the late results of removal of semilunar cartilages is unsatisfactory, the arthritis factor especially being important and not given sufficient weight when operation is advised. Discussion also of operative technique.

3. *Management of Fracture of the Mandible*—George C. Hensel, M. D., 2000 Van Ness Avenue, San Francisco.

Statistics of occurrence. Application of dental splints and wiring to control position of fragments. Early and late treatment. Complications due to malposition. Demonstration of intra-oral fixation.

4. *Dislocation of the Astragalus Associated with Fracture of the Cuboid and Fibula Following Simple Injury*—Sylvan Haas, M. D., 1533 Four Fifty Sutter Street, San Francisco.

A brief review of the literature, the mechanism of its production and the treatment of dislocation of the astragalus will be presented in conjunction with the report of this case.

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#### Second Meeting—Green Room

Tuesday, April 28, 2:30 to 5 p. m.

1. *Treatment of Hemothorax and Hemopericardium Following Chest Injuries*—Frank S. Dolley, M. D., 1247 Roosevelt Building, 727 West Seventh Street, Los Angeles.

Detailed discussion of hemothorax following chest injuries both in the consideration of the various causes of blood in the pleural cavity; when it is advisable to aspirate it and when it is not; when an immediate exploration to find the bleeding point is indicated. Under hemopericardium, causes of hemorrhage and recognition of heart tamponade and method of aspiration.

Discussion opened by Philip Stephens, M. D., Los Angeles.

2. *Use of Small Multiple Bone Grafts for Nonunion of Fractures*—Halbert W. Chappel, M. D., 111 Medical Office Building, 1136 West Sixth Street, Los Angeles.

Chief causes of nonunion are interference with circulation by crushing injuries, lack of contact of bone-forming elements, improper fixation, poor circulation in region of healing, infection more destructive than stimulating. Rapid repair may be obtained by small multiple bone grafts and blood clot, assisted by friction and mechanical irritation.

3. *Mechanism of the So-called Traumatic Neurosis*—Paul E. Bowers, M. D., 323 Subway Terminal Building, 417 South Hill Street, Los Angeles.

4. *The Healing of Experimental Fractures*—Keene O. Haldeman, M. D., Medico-Dental Building, 490 Post Street, San Francisco.

Following the production of fractures by operation and by closed manipulation, the healing process was studied by means of frequent x-ray pictures and by microscopic sections at various intervals of time. A special study was made of the rôle of periosteum in bone repair by operations in which periosteum was either stripped away from the line of fracture or interposed between the fragments of the right radius, while the fractured left radius with periosteum undisturbed served as a normal control. The importance of periosteum to union, and its part in the production of nonunion are clearly shown in x-rays and microscopic sections, of which lantern slides have been prepared.

Discussion by Hugh Jones, M. D., Los Angeles and B. P. Stephens, M. D., Oakland.

5. *Present National Activities in Medical Economics*—J. Rollin French, M. D., 417 Towne Avenue, Los Angeles.

The present national activities in medical economics have been prompted by a demand for more equitable and universal distribution of medical service. The present activities are directed toward experimenting with ways and means of establishing systems to satisfy the demands of the public, as well as reasonably respecting the major traditions taught by medical ethics.

## VII

### NEUROPSYCHIATRY SECTION

GEORGE G. HUNTER, M. D., *Chairman*  
910 Pacific Mutual Building  
523 West Sixth Street, Los Angeles

HENRY G. MEHRTENS, M. D., *Secretary*  
Stanford University Hospital  
San Francisco

#### First Meeting—Vanderbilt Room

Monday, April 27, 2:30 to 5 p. m.

1. *Chairman's Address*—George G. Hunter, M. D., Los Angeles.

2. *Psychiatry and the Criminal*—Herman Adler, M. D., 2525 Rose Walk, Berkeley.

An attempt to define psychiatry as a social science. The interests of psychiatry in the problem of social behavior. Behavior disorders as expressions of disturbances of internal and external equilibrium. Is it necessary to regard the criminal as a sick person? Treatment.

3. *California Mental Hygiene Survey*—Glenn E. Myers, M. D., 300 Professional Building, 1052 West Sixth Street, Los Angeles.

A mental hygiene survey of California was completed last summer by Frederick H. Allen, M. D., and co-workers. The report is not yet in print, or otherwise readily accessible. It is desired to present the substance of the report together with recommendations pertaining to the insane, feeble-minded, delinquents, insanity laws, and related subjects.

4. *A Study of Certain Mental Disorders in Twins*—Aaron J. Rosanoff, M. D., 716 Westlake Professional Building, 2007 Wilshire Boulevard, Los Angeles.

Cases of mental deficiency, epilepsy, schizophrenic psychoses, etc., occurring in twins (one or both) are being collected for this study. The main purpose is to compare the findings in monozygotic twins with those in dizygotic twins, with a view to determining the relative importance of inborn and environmental factors, respectively.

5. *Business Meeting*.

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#### Second Meeting—Vanderbilt Room

Wednesday, April 29, 2:30 to 5 p. m.

1. *Abrupt Slowing of Cerebral Circulation*—Thomas G. Inman, M. D., 2000 Van Ness Avenue, San Francisco.

Abrupt slowing of the cerebral circulation may be responsible for various symptoms usually attributed to a diminution in the quantity of blood within the cerebral vessels. Giddiness, dizziness, and syncope occur in persons with normal vessels, but in the arteriosclerotic, varying degrees of thrombosis may occur with consequent disabling paralyses.

2. *Organic Somatic Disease—Associated with Nervous and Mental Disturbances*—Julian M. Wolfsohn, M. D., 1406 Medico-Dental Building, 490 Post Street, San Francisco.

Report of two cases of nervous disease, and four cases of insanity, the syndromes of which have been completely relieved by the elimination of organic somatic disease. The cases in-

cluded one of psychasthenia, one of neurasthenia, and four cases of manic depressive insanity—history and description of each case with procedure followed. Comments.

3. *Spontaneous Intraventricular Hemorrhage—Report of Small Series of Cases*—Samuel D. Ingham, M. D., 1252 Roosevelt Building, 727 West Seventh Street, Los Angeles.

Clinical picture. Ventricular puncture for diagnosis. Definite but limited value of repeated lumbar puncture. Complete recovery in one patient verified by operation and ventricular puncture.

4. *Craniocerebral Injury—A Study of Twelve Hundred Consecutive Cases*—Carl W. Rand, M. D., 1023 Pacific Mutual Building, 523 West Sixth Street, Los Angeles; and D. H. Werden, M. D., 1100 Mission Road, Los Angeles. (By invitation.)

The greater incidence of craniocerebral injuries makes the evaluation of clinical signs and symptoms, and the recognition of complications, of paramount import. A series of twelve hundred consecutive cases has been studied, stressing the incidence and neurologic aspects of basal skull fractures, with their frequent and often very serious complications.



## VIII

### OESTETRICS AND GYNECOLOGY SECTION

WILLIAM H. GILBERT, M. D., Chairman  
305 Medico-Dental Building  
746 Francisco Street, Los Angeles

JOHN C. IRWIN, M. D., Secretary  
1709 West Eighth Street, Los Angeles

**First Meeting—California Room**  
**Monday, April 27, 2:30 to 5 p. m.**

1. *The Narrow Bispinous Diameter—Its Influence on Occiput Posterior Positions*—Samuel Hanson, M. D., 1109 Medico-Dental Building, Stockton.

The bispinous diameter was accurately measured in a series of cases. The data obtained show that if this diameter is narrow, rotation in occiput posterior positions is seriously obstructed. The practical bearing of this fact on treatment is pointed out.

Discussion opened by Albert Spalding, M. D., San Francisco.

2. *X-Ray Pelvimetry*—John N. Ewer, M. D., 251 Moss Avenue, Oakland, and Carl B. Bowen, M. D., 202 Franklin Building, 1624 Franklin Street, Oakland.

There is often a great discrepancy between the size of the pelvis as estimated by external pelvimetry and as determined radiographically. Value of x-ray pelvimetry from observation of labors of patients measured. Technique. Demonstration of some abnormal radiographs.

3. *Cesarean Sections in Private Practice—Report of One Hundred Cases*—Thomas F. Wier, M. D., 911 Medico-Dental Building, 233 A Street, San Diego.

A short review of sections, comparing mixed, private and clinical cases, institutional cases, private practice cases; the indications and classifi-

cation for the section; preparation of patient; classifying operation; postoperative care; infant and maternal mortality and morbidity. Comparing end results of obstetrician with the general surgeon.

4. *Menstrual Irregularities and the Ductless Glands*—Clifford A. Wright, M. D., 2417 South Hope Street, Los Angeles.

Physiology of menstruation; physiology of the different ductless glands in relation to menstruation; irregularities of menstruation from an endocrine standpoint; outline of treatment; illustrative cases. (Lantern slides.)

Discussion opened by Llewellyn R. Lewis, M. D., Los Angeles.

5. *Talking Movie—Low Cervical Cesarean Section*—Joseph B. De Lee, M. D., Chicago. Presented by Lyle McNeile, M. D., Los Angeles.

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**Second Meeting—California Room**  
**Wednesday, April 29, 2:30 to 5 p. m.**

1. *Chairman's Address—The Cervix as a Factor in Hysterectomy*—William H. Gilbert, M. D., Los Angeles.

Anatomy and physiology of the cervix. Relation to the perineum in relaxed vaginal outlet. Discussion of cervical pathology and relation to malignant and nonmalignant growths. Relative merits of supracervical and total hysterectomy. Comparison of mortality rate in the two operations.

2. *Visualization of Hydrosalpinx by Means of Uterosalpingography*—Albert Mathieu, M. D., Medical Arts Building, Portland, Oregon. (By invitation.)

Question regarding existence of hydrops tubae profluens; few cases thought to be such have been reported. Experience has shown that most cases of small hydrosalpinx are found accidentally at operation because these are usually not felt with bimanual examination. Continued experience with uterosalpingography shows hydrosalpinx more common than formerly suspected because probably about 50 per cent of these are open at the proximal end of the tube and hence can be filled with iodized oil. Slides and technique.

3. *Tumors Complicating Pregnancy and Labor*—Frank W. Lynch, M. D., University of California Hospital, San Francisco.

A review of the fibroids, ovarian tumors, and carcinoma of the cervix. Incidence and frequency of complication in this group. Treatment. Personal experience together with a review of the literature.

Discussion opened by Lyle G. McNeile, M. D., Los Angeles.

4. *Clinical Aspects of Carcinoma of the Ovary*—L. A. Emge, M. D., 2000 Van Ness Avenue, San Francisco.

Etiologic factors are discussed in relation to frequency and age. The diagnosis, and particularly the differentiation of the type of carcinoma based on uterine bleeding phenomena, form the main theme of the paper. The merits of surgical and radiologic treatment are discussed only briefly.

Discussion opened by Roy Fallas, M. D., Los Angeles.

## IX

**PATHOLOGY AND BACTERIOLOGY SECTION**

ERNEST M. HALL, M. D., *Chairman*  
St. Vincent's Hospital, Los Angeles

GEORGE D. MANER, M. D., *Secretary*  
Wilshire Medical Building  
1930 Wilshire Boulevard, Los Angeles

Z. E. BOLIN, M. D.  
*Chairman, Section Program Committee*  
University of California Medical School  
San Francisco

**First Meeting—Red Room****Joint Meeting of Pathology and Bacteriology and General Medicine Sections****Monday, April 27, 2:30 to 5 p. m.**

This program of the joint meeting is printed under the first meeting of the General Medicine Section. See page 298.

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**Second Meeting—Vanderbilt Room****Tuesday, April 28, 2:30 to 5 p. m.**

1. *Chairman's Address—Experimental Copper Poisoning*—Ernest M. Hall, M. D., Los Angeles.

2. *A Reducing Body in the Blood of Nephritis*—Rawson J. Pickard, M. D., 805 Watts Building, 520 E Street, San Diego.

Report of a nonglucose reduction found in the blood of patients with albumin and casts in the urine.

3. *Hematological Findings in Nephritis*—Lawrence Parsons, M. D. (by invitation), 1100 North Mission Road, Los Angeles; Theodore S. Kimball, M. D., 312 North Boyle Avenue, Los Angeles; and Martha W. Ekola, M. S., Los Angeles (by invitation).

The literature on hematological findings in renal disease is reviewed. A discussion of the parallelism between the anemia and nitrogen retention in cases showing impairment of renal function is given. Observations on a short series of cases are reported and compared with the data in the literature.

4. *Nonprotein Nitrogen Curves in Health and Disease*—Paul S. Dougherty, M. D., 2014 South Figueroa Street, Los Angeles; Albert L. Chaney, Ph. D.; and Ruth Bolton (by invitation), 1100 North Mission Road, Los Angeles.

The effect of ingestion of a high protein meal on the N. P. N. determination in blood was studied for both normal and pathological cases. Samples were taken fasting and at hourly intervals after the meal for a period of eight hours.

5. *Experimental Rickets and Calcification of Dentine*—H. Becks, M. D., Hooper Foundation for Medical Research, San Francisco. (By invitation.)

The influence of rachitic Diet 3143 (McCullum) on the activity of odontoblasts has been studied. The results can be applied to the histogenesis and pathogenesis of bone. The question of pathologic changes of the forming cells and their effect upon the formation of ground substance, osteoid and dentinoid tissue as well as their calcification will be discussed.

6. *Experimental Nephritis*—Jean Oliver, M. D., care of Hoagland Laboratories, Brooklyn, New York. (By invitation.)

**Special Notice to Section Members**

9 to 11 a. m.—Visit to University of California Medical School Pathology Museum.  
12:30 p. m.—Luncheon for Pathology and Bacteriology Section in Little Grill.

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**Third Meeting—Red Room****Wednesday, April 29, 2:30 to 5 p. m.****Joint Meeting of General Medicine and Pathology and Bacteriology Sections****SYMPONIUM ON THE NEWER KNOWLEDGE OF NEPHRITIS**

1. *Pathology*—Jean Oliver, M. D., Hoagland Laboratories, Brooklyn, New York (by invitation), and William Ophüls, M. D., Stanford Medical School, San Francisco.
2. *Clinical Aspects*—B. O. Raulston, M. D., 709 Westlake Professional Building, 2007 Wilshire Boulevard, Los Angeles; Thomas Addis, M. D., Stanford University Medical School, San Francisco; E. M. MacKay, M. D. (by invitation), 476 Prospect Street, La Jolla.

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**Visit by Section Members to the Pathological Laboratories of the Southern Pacific Hospital****Wednesday 10 a. m. to 1 p. m.**

Visit to new pathological laboratories of the Southern Pacific Hospital. Followed by a buffet luncheon at the Southern Pacific Hospital as guests of W. T. Cummins, M. D.

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**Fourth Meeting—Vanderbilt Room****Thursday, April 30, 9 to 11:30 a. m.**

1. *Coronary Sclerosis as Seen in a Coroner's Service*—A. A. Berger, M. D., 202 Clement Street, San Francisco. (Demonstration of specimens and lantern slides.)
2. *Injuries of the Brain*—(Demonstration with specimens and lantern slides.) A. M. Moody, M. D., St. Francis Hospital, San Francisco.
3. *Etiology of the Recent Epidemic of Horses in the San Joaquin Valley*—Karl F. Meyer, Ph. D., Hooper Foundation for Medical Research, San Francisco. (By invitation.) (Lantern slides and motion pictures.)
4. *A Method for Titrating Diphtheria Antitoxin in Small Quantities of Blood*—W. H. Kellogg, State Hygienic Laboratory, Berkeley.

Test is one based upon property of diphtheria toxin to produce a definite skin reaction in white guinea pigs in amounts of less than 1/300 of a MLD. By the use of a dose of diphtheria toxin and antitoxin containing an excess of one Kellogg test dose of toxin, amount of antitoxin as small as 1/1000 of a unit can be detected. Tests of immunity can be made with a drop of dried blood.

5. *Myomata of Stomach and Small Intestine*—R. W. Hammack, M. D., 1003 Pacific Mutual Building, 523 West Sixth Street, Los Angeles.

A brief review of literature. Report of two cases of myoma of the stomach and two of the small intestine. Discussion of pathologic features. Discussion of clinical symptoms of which hemorrhage is most prominent.

6. *Diagnosis of Malignancy—Study of Sediment of Ascitic and Pleural Fluids*—R. J. Millner, M. D., University of California Hospital, San Francisco.

The examination of the sectioned centrifuged sediment of ascitic and pleural fluids permits a positive or probable diagnosis of malignancy in about 70 per cent of the effusions caused by malignant involvement of the pleura or the peritoneum.



## X

### PEDIATRIC SECTION

DONALD K. Woods, M. D., *Chairman*

Fifth and Laurel Streets  
San Diego

E. PAUL COOK, M. D., *Secretary*  
215 Sainte Claire Building  
San Jose

CLIFFORD D. SWEET, M. D.  
*Chairman, Section Program Committee*  
242 Moss Avenue, Oakland

**First Meeting—California Room**  
Tuesday, April 28, 2:30 to 5 p. m.

1. *A Case of Angioma Arteriale of the Cerebral Cortex*—Hartzell H. Ray, M. D., 23 Second Avenue, San Mateo.

A review of the English literature; discussion of the symptomatology, etiology, and treatment of this rare type of blood-vessel tumor, together with illustrations of various types of these anomalies. Case report.

Discussion by Howard Fleming, M. D., San Francisco, and Thomas Cornwall, M. D., San Francisco.

2. *Tuberculosis Among Oriental Children in San Francisco*—Lloyd B. Dickey, M. D., Stanford University Medical School, San Francisco.

The incidence of tuberculous infection and disease in unselected groups of Chinese and Japanese children in San Francisco, living in that part of the community where the mortality rate for tuberculosis is four times that of the city at large, and where contacts with open cases of tuberculosis are more numerous and intimate.

Discussion by Harold K. Faber, M. D., San Francisco; Philip King Brown, M. D., San Francisco; and William C. Hassler, M. D., San Francisco.

3. *The Tuberculin Test in the Diagnosis of Childhood Tuberculosis—A Review of Recent Progress*—Ernst Wolff, M. D., 1033 Four Fifty Sutter Street, San Francisco, and Robert S. Stone, M. D., University of California Hospital, San Francisco.

The question of specificity of the tuberculin test and its relation to x-ray interpretation is discussed. The intensity of the tuberculin reaction increases in proportion with the percentage of children showing roentgenologic findings having active tuberculosis and having clinical and x-ray evidences of tuberculosis. The indication of the various test methods with tuberculin are considered.

Discussion by Clain F. Gelston, M. D., San Francisco, and Lloyd B. Dickey, M. D., San Francisco.

4. *Behavior of the Monocytes in Tuberculosis in Childhood*—William Anthony Reilly (by invitation),

M. D., University of California Hospital, San Francisco.

Statistical comparison of Wright's stain with the supravital stain for monocytes. Results, while of value as an index of increased activity, do not confirm the high monocyte percentage reported by previous investigators. The small proportion of patients with miliary tuberculosis may account for discrepancy.

5. *Osteochondritis of Adolescents*—Orrin S. Cook, M. D., Medico-Dental Building, 1127 Eleventh Street, Sacramento.

Perthes' disease of the hip, Koehler's disease of the tarsal scaphoid, and various similar conditions involving other joints have been described as different diseases by the various individuals whose names are attached to them, but they are all alike in etiology and pathology and are, therefore, all parts of the same pathologic entity. These conditions are discussed briefly from the clinical and roentgenologic standpoints. (Lantern slides.)

Discussion by Clain Gelston, M. D., San Francisco, and George J. McChesney, M. D., San Francisco.

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### Second Meeting—California Room

Thursday, April 30, 9 to 11:30 a. m.

1. *Children's Dentistry*—Charles A. Sweet, D. D. S., 242 Moss Avenue, Oakland. (By invitation.)

Demonstration with patients and lantern slides of operative dental procedures. Demonstration of proper way to teach brushing of teeth. Résumé of recent dental researches on causative factors of dental caries. Necessity of oral prophylaxis at an early age.

2. *Poliomyelitis—A Review of the 1930 Epidemic in Los Angeles*—Oscar Reiss, M. D., 312 Wilshire Medical Building, 1930 Wilshire Boulevard, Los Angeles.

The 1930 epidemic of poliomyelitis in Los Angeles City briefly reviewed. Number of cases and mortality rate compared to other epidemics. A study is presented of two hundred cases observed in the Los Angeles General Hospital, with special note as to type. Cytological studies shown. The results obtained with convalescent serum analyzed.

Discussion by Harold K. Faber, M. D., San Francisco, and William Palmer Lucas, M. D., San Francisco.

3. *Pyelitis in Children—A Consideration of Chronic and Recurring Pyuria and Its Treatment*—William M. Happ, M. D., 925 Pacific Mutual Building, 523 West Sixth Street, Los Angeles.

Paper presents for discussion a consideration of recurrent and chronic cases of pyuria in children, associated with indefinite and nonlocalizing symptoms. Discussion of relationship to anatomic changes in the urologic tract, particularly stricture of the ureter, which may be congenital or acquired. Treatment.

Discussion by Elmer Belt, M. D., Los Angeles.

4. *Clinical Use of Bacteriophage*—Rita C. Hough, M. D., 1212 Medico-Dental Building, 233 A Street, San Diego.

Series of case reports in which bacteriophage has been used, including cases of gastro-enteritis, ruptured appendix with peritonitis, rhinitis, furuncles, and septic meningitis. Paper will be presented purely from the standpoint of a clinician, not from that of a research artist.

Discussion by J. Rawson Pickard, M. D., San Diego, and Edward B. Shaw, M. D., San Francisco.

## XI RADIOLOGY SECTION

CHARLES M. RICHARDS, M. D., *Chairman*  
303 Medico-Dental Building  
San Jose

L. HENRY GARLAND, M. D., *Secretary*  
1739 Four Fifty Sutter Street  
San Francisco

WILLIAM H. SARGENT, M. D.  
*Chairman, Section Program Committee*  
Franklin Building  
1624 Franklin Street, Oakland

**First Meeting—Little Grill**  
**Tuesday, April 28, 2:30 to 5 p. m.**

1. *Chairman's Address*—Charles M. Richards, M. D., San Jose.
2. *Discussion of Business Matters*—To be opened by William H. Sargent, M. D., of Oakland.
3. *Discussion of Technical Matters*—To be opened by John D. Lawson, M. D., of Woodland.

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**Second Meeting—Little Grill**  
**Wednesday, April 29, 2:30 to 5 p. m.**

1. *The Diagnostic Value of Prepyloric and Pyloric Roentgen Findings*—Robert S. Stone, M. D., University of California Hospital, San Francisco, and Howard E. Ruggles, M. D., 312 Fitzhugh Building, 384 Post Street, San Francisco.

Changes in the shape of the pyloric and prepyloric regions of the stomach may be due to intrinsic lesions such as carcinoma, ulcer, lues, etc., or may be the result of perigastric adhesions or extrinsic tumors. Many times, however, defects closely resembling the above are entirely due to spasm. By reviewing cases proved at operation or autopsy the authors attempt to bring out the diagnostic value of the various defects, especially those not due to local lesions.

Discussion by J. Homer Woolsey, M. D., San Francisco, and Milton J. Geyman, M. D., Santa Barbara.

2. *Lesions of the Colon From a Roentgenologic Stand-point*—Raymond G. Taylor, M. D., Mila J. Kinney, M. D., and Richard T. Taylor, M. D., 1212 Shatto Street, Los Angeles.

The roentgen aspects of diseases of the colon are briefly reviewed; first, the various organic lesions; second, colitis; and third, spasm. The manifestations of colitis and spasm are dealt with especially. (Lantern slides.)

Discussion opened by Robert R. Newell, M. D., San Francisco.

3. *End Results in the Roentgen Treatment of Graves' Disease*—J. Marion Read, M. D., 1530 Medico-Dental Building, 490 Post Street, San Francisco.

A follow-up study of a group of patients with Graves' disease, all of which were treated by nonsurgical measures. These varied according to the individual case, all patients receiving, however, roentgen irradiation to the thyroid gland. The time which elapsed since treatment was given varies from two to ten years.

Discussion by John M. Rehfisch, M. D., San Francisco, and William J. Kerr, M. D., San Francisco.

4. *Cancer of the Female Genital Organs—End Results in the Radiation Treatment*—William H. Sargent, M. D., 616 Franklin Building, 1624 Franklin Street, Oakland.

The five-year results in a series of approximately eighty cases of carcinoma of the cervix,

and approximately ninety cases of carcinoma elsewhere in the female genital tract are briefly described. The prognosis of certain malignancies such as those of the vagina are discussed.

Discussion by C. Frederick Fluhmann, M. D., San Francisco, and Orville N. Meland, M. D., Los Angeles.

5. *Carcinoma of the Breast—Treatment by Interstitial Radiation*—Albert Soiland, M. D., 1407 South Hope Street, Los Angeles.

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## Third Meeting—Little Grill

**Thursday, April 30, 9:00 to 11:30 a. m.**

### CASE REPORTS

1. *Pleuropneumonitis Following Deep X-Ray Therapy*—Earl H. Gray, M. D., Woodland Clinic, Woodland.
2. *Passive Congestion of the Lungs in the Presence of Coronary Artery Occlusion*—John F. Chapman, M. D., 209 Professional Building, 65 North Madison Avenue, Pasadena.
3. *Gastric Obstruction as a Result of Perisplenic Hematoma—Confusion with Diaphragmatic Hernia*—Robert A. Powers, M. D., Medico-Dental Building, Palo Alto.
4. *Congenital Atresia of the Esophagus*—Ralph S. Graham, M. D., Sutter Hospital, Sacramento.
5. *Subdiaphragmatic Retroperitoneal Abscess, with Air-filling Following Retroperitoneal Drainage*—Frederick H. Rodenbaugh, M. D., 321 Medico-Dental Building, 490 Post Street, San Francisco.
6. *Unusual Roentgen Finding*—Rolla G. Karshner, M. D., 510 South Lucas Avenue, Los Angeles.

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## RADIOLOGICAL EXHIBIT

The radiological exhibit will be placed in the back of the general meeting hall (Gold Room). The California Medical Association recently purchased four large, adaptable viewing cabinets in order that there might be ample room and excellent facilities for a radiological showing. Members who are desirous of arranging for space are requested to get in touch with the secretary of the Radiological Section, L. H. Garland, M. D., 450 Sutter Street, San Francisco, not later than April 10.



## XII

### UROLOGY SECTION

HARRY W. MARTIN, M. D., *Chairman*  
1010 Quinby Building  
650 South Grand Avenue, Los Angeles

NATHAN G. HALE, M. D., *Secretary*  
418 Medico-Dental Building  
1127 Eleventh Street, Sacramento

**First Meeting—Little Theater**  
**Monday, April 27, 2:30 to 5 p. m.**

1. *Chairman's Address—Rupture of the Bladder—A Simple and Accurate Method of Diagnosis, with Case Reports*—Harry W. Martin, M. D., Los Angeles.
2. *Surgical Accidents to the Female Pelvic Ureter*—Edward W. Beach, M. D., 306 Medico-Dental Building, 1127 Eleventh Street, Sacramento.

Anatomy; history; types of injury and their responsible gynecological operations. Prophy-

lactic and reconstructive measures. Review of four cases personally observed with the methods applied and subsequent results. (Lantern slides.)

Discussion opened by Franklin Farman, M. D., Los Angeles.

3. *Evolution of the Operation of Prostatectomy*—Verne C. Hunt, M. D., Roosevelt Building, 727 West Seventh Street, Los Angeles.

Early methods of dealing with bladder-neck obstructions. A consideration of the early methods of perineal and suprapubic removal of prostate enlargements; and a consideration of the modern methods of prostatectomy.

Discussion opened by Frank Hinman, M. D., San Francisco.

4. *Carcinoma of the Penis*—A. M. Meads, M. D., 251 Moss Avenue, Oakland.

A brief review of the etiology, types, metastasis, etc. Types of treatment. Lessons from a study of five cases. Radical amputation. A plastic procedure for the formation of a false penis following amputation. (Lantern slides.)

Discussion opened by James R. Dillon, M. D., San Francisco.

5. *The Genito-Urinary Tract of the Fin-Back Whale (Cetacean Rorqual)*—A. Elmer Belt, M. D., 722 Pacific Mutual Building, 523 West Sixth Street, Los Angeles.

Motion pictures.

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#### Second Meeting—Little Theater

Tuesday, April 28, 2:30 to 5 p. m.

1. *Surgery of the Kidney During Pregnancy*—Franklin Farman, M. D., 709 California Medical Building, 1401 South Hope Street, Los Angeles, and K. C. Gummess, M. D., 733 Chapman Building, 756 South Broadway, Los Angeles.

Kidney surgery during the pregnant state by no means rare. In the authors' case, nephrectomy for abscess of the kidney was carried out during the fifth month of pregnancy. Importance of kidney complications arising during pregnancy, some of which demand surgical interference.

Discussion opened by William E. Stevens, M. D., San Francisco.

2. *Differential Diagnosis of Pathologic Conditions of the Upper Urinary Tract and Other Abdominal Organs*—William E. Stevens, M. D., 602 Flood Building, 870 Market Street, San Francisco.

Reasons for confusion in diagnosis. Pathologic conditions of the upper urinary tract mistaken for diseases of other organs. Extra-urinary tract conditions simulating lesions of the kidneys or ureters. Coexisting lesions. (Lantern slides.)

Discussion by Charles P. Mathé, M. D., San Francisco, and Anders Peterson, M. D., Los Angeles.

3. *Experiences with Intravenous Urography*—Leo Buerger, M. D., 1003 Wilshire Medical Building, 1930 Wilshire Boulevard, Los Angeles, and J. Abowitz, M.D., 4507 Kingswell Avenue, Los Angeles.

Evaluation of the clinical application of this method; data obtained in reno-ureteral anomalies, renal ptosis, ureteral pathology, renal and ureteral lithiasis, hydronephrosis, reno-ureteral tuberculosis, neoplasms of kidney and bladder, hypertrophy of prostate (adenoma), in cases of obscure gastro-intestinal symptoms; and the interpretation of the findings. (Lantern slides.)

Discussion by Lewis Michelson, M. D., San Francisco.

4. *Perinephritic Abscess Complicating Polycystic Kidney—Report of a Case*—Morrell Vecki, M. D., 1017 Four Fifty Sutter Street, San Francisco.

Review of the literature of such cases. Rarity. Report of case including history, physical examination, urinalysis, phthalein, blood chemistry, cystoscopy, operation and pathologic report. Demonstration of specimens, bilateral polycystic kidneys. Comments. Masking of condition by infection.

Discussion opened by Thomas E. Gibson, M. D., San Francisco.

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#### Third Meeting—Tapestry Room

Wednesday, April 29, 2:30 to 5 p. m.

1. *The Frequency of Tubercle Bacilli in the Urine in Chronic Pulmonary Tuberculosis in Relation to Urogenital Complications*—Esther Rosencrantz, M. D., San Francisco Hospital, San Francisco, and F. L. A. Gonzales, M. D., 1432 Four Fifty Sutter Street, San Francisco.

Urine of two hundred male patients with chronic pulmonary tuberculosis proven by positive sputum, examined and inoculated into guinea-pigs. Seven per cent were positive for tubercle bacilli—all cases especially studied as to onset and frequency of urogenital findings with relationship to pulmonary conditions and other complications.

Discussion opened by Lionel P. Player, M. D., San Francisco.

2. *Pyogenic Urinary Infections*—Frank Hinman, M. D., 603 Fitzhugh Building, 384 Post Street, San Francisco.

Introduction. Unsatisfactory clinical nature of pyelitis and pyelonephritis as descriptive terms of urinary infections. Difficulties of classification arise from following considerations: (1) Etiological conditions (a) bacterium; (b) urinary obstructions or stasis; (c) routes of invasion. (2) Anatomopathological considerations: (a) lower versus upper tract; (b) renal pathology. A practical clinical classification of urinary infections: (a) open, or primary infection; (b) obstructive or secondary infection.

Discussion opened by A. Elmer Belt, M. D., Los Angeles.

3. *Epididymitis*—J. C. Negley, M. D., Brack Shops Building, 527 West Seventh Street, Los Angeles.

Etiology; generally infection of contiguous parts as vesicles, prostate, bladder, urethra, etc. Trauma plays small part when infection is absent. Blood-borne infections, possible but rare. Pathology: deals with type of infection, i. e., gonorrhreal, pyogenic, tuberculous, etc.; acute or chronic stage. Diagnosis: history urine findings, clinical signs both objective and subjective. Treatment: medical or surgical. Comparative analysis of results. Type of case requiring surgery.

Discussion by Louis C. Jacobs, M. D., San Francisco.

4. *Calculus Anuria*—Edgar C. Lee, M. D., 811 Medico-Dental Building, 233 A Street, San Diego.

Discussion of a case in which sudden blocking of one ureter by a calculus caused complete anuria, the opposite kidney being absent or diseased. No previous urinary symptoms. A review of the diagnosis, the course of the disease and the treatment.

Discussion opened by A. A. Kutzmann, M. D., Los Angeles.

## ENTERTAINMENT PROGRAMS

### GOLF

#### GOLF COMMITTEE

Frank Sheehy, Chairman	San Francisco
Robert F. Kile	San Francisco
James W. Morgan	Modesto

The Golf Tournament held in conjunction with the coming state meeting will be held on Thursday afternoon, April 30, 1931 at the Lake Merced Golf and Country Club.

Those members desiring to participate should notify Frank Sheehy, M. D., chairman, on or before April 24. Flights will be held in three classes, A, B and C, and appropriate prizes will be distributed to winners of Low Gross and Low Net in each flight. There will be additional prizes, as donated.

Buffet luncheon will be served at noon. Dinner for those desiring to attend same will be served at 7 p. m.

### ENTERTAINMENT EVENTS FOR WOMEN GUESTS

*Women physicians in attendance, wives and guests of members of the California Medical Association, are cordially invited to register at the entertainment desk for the various events listed.*

#### 1. Tea for the President's Wife and Visiting Women.

Tuesday, April 28, from 3 to 5 p. m.—San Francisco County Medical Society Building, 2180 Washington Street, corner of Laguna.

*Take Yellow Taxi, or Jackson Street car on Powell to Laguna, and walk up hill one block to Sacramento.*

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#### 2. Luncheon and Sightseeing Trip.

Wednesday, April 29, 12:30 p. m.—Luncheon at the Shanghai Low restaurant in Chinatown, 532 Grant Avenue, (one street below Powell), will be followed by a sightseeing drive to points of interest in San Francisco and vicinity. Drive starts from Shanghai Low restaurant immediately following luncheon. The

cost of the luncheon (50 cents) will be individually borne. The sightseeing trip is complimentary.

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#### 3. Golf.

Thursday morning, April 30—Matches will be arranged at the Presidio Golf Club for all women who desire to play golf. Green fee, \$3.

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#### Dinner to Visiting Women Physicians

The San Francisco Women Physicians' Club cordially invite all visiting women physicians attending the convention to a dinner to be held at the Western Women's Club, 609 Sutter Street, on Wednesday evening, April 29 at 6:30 o'clock. Reservations should be made at the women's entertainment desk in the lobby of the Fairmont Hotel.

### WOMAN'S AUXILIARY LUNCHEON

Tuesday, April 28, 12:30 p. m.

Gray Room, Fairmont Hotel

The annual luncheon of the Woman's Auxiliary will be held in the Gray Room of the Fairmont Hotel, immediately to the right of the main dining room.

Members of the auxiliary and those eligible for membership are cordially invited to make reservation for this luncheon at the Woman's entertainment desk in the lobby. Cover charge, \$1.25.

During the luncheon, Lyell C. Kinney, M. D., President of the California Medical Association, and Junius B. Harris, M. D., President-Elect, will speak on some special phase of the general topic, "Opportunities and Limitations of the Woman's Auxiliary."

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#### Guest Cards—Woman's City Club

The privileges of the Woman's City Club of San Francisco, 465 Post Street, have been extended to all visitors during their stay. Guest cards may be secured at the entertainment desk.

### WOMAN'S AUXILIARY MEETINGS

Mrs. James F. Percy, President, 1030 South Alvarado Street, Los Angeles.

Mrs. James M. McCullough, First Vice-President, Crockett.

Mrs. Thomas A. Stoddard, Second Vice-President, 851 California Street, San Francisco.

Mrs. Dexter R. Ball, Secretary-Treasurer, 2419 Bonnie Brae, Santa Ana.

*All members of the state and county auxiliaries are invited to participate.*

**Board Meeting.**—A board meeting will be held in headquarters, room 134, on the mezzanine on Monday at 10:30 a. m.

**First General Meeting.**—On Tuesday, April 28, at 9:30 a. m. a meeting of the Woman's Auxiliary of the California Medical Association will be held in the Red Room. All members of county and state auxiliaries and all visiting women eligible to membership are invited to attend.

**Woman's Auxiliary Luncheon.**—A luncheon meeting has been arranged for Tuesday, 12:30 p. m., following the morning sessions. (See notice above.)

**Second General Meeting.**—On Wednesday, April 29, at 9:30 a. m., a second meeting of the Woman's Auxiliary of the California Medical Association will be held in the Red Room. The officers for the new year will be elected at this meeting. All members of the auxiliary and all visiting women eligible to membership are earnestly requested to attend. If it is found convenient, a postconvention round table of the officers and delegates will be planned and announced by the incoming president.

**Headquarters for Members.**—Room 134, on the mezzanine, has been set aside as a general headquarters for members.

## STATE MEDICAL ASSOCIATIONS

### CALIFORNIA MEDICAL ASSOCIATION\*

LYELL C. KINNEY.....President  
JUNIUS B. HARRIS.....President-Elect  
EMMA W. POPE.....Secretary

#### OFFICIAL NOTICES

The next meeting of the Council of the California Medical Association will be held at the Fairmont Hotel, San Francisco, at 8 p. m., Sunday, April 26, 1931, room 126.

Daily meetings during the annual session will be held thereafter by the Council in Room 126, first floor.

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#### Nineteen Thirty-One Annual Session Headquarters

**Fairmont Hotel.**—Headquarters for the next annual session, to be held at San Francisco April 27 to 30, 1931, will be the Fairmont Hotel.

The Fairmont has quoted the following rates for rooms, all with baths:

Single rooms, opening on large inner court, \$4.  
Double rooms, opening on large inner court, \$6.  
Single outside rooms with city and marine view, \$6.  
Double outside rooms with city and marine view, \$8.  
Double outside rooms with city and marine view, \$10.  
*You are advised to make your reservations at once.*

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#### This Is the Last Issue Which Will Be Mailed to Delinquent Members

If you are among those on the "delinquent" membership list of the State Association, you should get

\* For a complete list of general officers, of standing committees, of section officers, and of executive officers of the component county societies, see index reference on the front cover, under *Miscellany*.

in touch with the secretary-treasurer of your county medical society immediately. Prompt payment of dues will insure the continuance of the JOURNAL, as well as other organization advantages.

In compliance with federal postal regulations the names of all unpaid members must be removed from the JOURNAL mailing list after this April issue appears.

Membership dues for 1931 were due on or before January 1. This obligation was met promptly by a large percentage of the members. As a courtesy to those few who, through neglect or oversight, have thus far failed to pay their 1931 dues, the JOURNAL has been mailed for the first four months of this calendar year. See California Medical Association constitution and by-laws, Chapter X, Section 1, and Chapter II, Section 2.

#### COMPONENT COUNTY SOCIETIES CONTRA COSTA COUNTY

The meeting of the Contra Costa County Medical Society was held jointly with the Contra Costa County Dental Association in Richmond on March 10. The minutes of the previous meeting, held in Martinez, were read and approved. A letter from the American College of Surgeons, calling the members' attention to the coming meeting in Oakland, was read. At the request of the State Association the following members were appointed by the chair to serve on the committee to compile a history of the county society: L. St. John Hely, P. C. Campbell, U. S. Abbott, and C. R. Blake, all of Richmond. The secretary made a report of the meeting in Oakland on March 9, held jointly with the Alameda County Society, at which the president of the State Association, Dr. Lyell C. Kinney, was honored. The president's message was conveyed to the members and elicited a great deal of interest.

Dr. W. A. Rowell, president of the society, next introduced Dr. Clifford Sweet of Oakland, who delivered a paper on "Special Aspects of Dentistry in



The Plunge, Fairmont Hotel, San Francisco, C. M. A. Headquarters, Annual Session, 1931

Children." The relationship between physician and dentist in this important work was stressed at great length by the speaker. Physicians were urged to pay more attention to defects of deciduous teeth in their general examination of children. The importance of preserving normal deciduous teeth as long as possible and the bearing of these teeth on the healthful development of the child was illustrated by plaster models, charts, and pathological specimens.

The Dental Association through its president, Dr. L. A. Hewitt, presented Dr. B. E. Lisher of the University of California Dental College, who spoke on "Dental Anomalies." The etiology, diagnosis and treatment of various forms of such anomalies with their influence on facial development was discussed by the speaker and illustrated by a series of lantern slides.

This meeting was one of the most instructive and the best attended that we have had for some time. The Dental Association was very grateful to have an opportunity of hearing the dental problems of children discussed so well by a member of our profession, and the society appreciated the privilege of hearing this all-important subject discussed by a dental expert. Thirty members of the two associations attended this meeting, which was followed by a buffet supper at which the Woman's Auxiliary were guests.

L. H. FRASER, *Secretary.*

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#### FRESNO COUNTY

The regular monthly meeting of the Fresno County Medical Society was held at the Californian Hotel March 3, twenty-four members being present.

Applications for memberships were received from Dr. J. M. Humphreys of Madera, Dr. Wayne A. Hunt of Fresno, and Dr. Charles E. Nixon of Fresno.

Dr. N. J. Dau made a preliminary report on the tuberculosis education campaign, and announced that Dr. F. M. Pottenger would probably speak at the next regular meeting.

Invitation from the California-Nevada section of the American College of Surgeons to attend their section meetings was read.

A letter from Librarian Miss Sarah E. McCardle was read and referred to the Library Committee.

Dr. Frank Tillman presented a verbal communication that he had been asked to see if the members of the society would consider the sponsoring of the formation of a clinic by the society of the Mexican Baptist Church.

Doctor Dau moved, seconded by Doctor Jorgensen, that the medical society go on record as opposed to such a clinic, and that they be referred to the clinic at the General Hospital. Motion carried.

Committees for 1931:

Board of Censors—C. M. Vanderburgh, J. H. Pettis, and F. K. Pomeroy.

Committee on Ethics—C. A. James, E. J. Couey, and N. J. Dau.

Committee on Library—G. A. Hare, C. O. Mitchell, and C. D. Collins.

Publicity Committee—J. M. Frawley, A. H. Konigsmacher, and T. F. Madden.

Program Committee—E. R. Scarboro, G. K. Nider, and C. A. James.

Welfare Committee—A. B. Cowan, J. R. Walker, and C. P. H. Kjaerbye.

Membership Committee—E. H. Coleman, G. K. Nider, and H. A. Randel.

Dr. T. F. Madden was nominated for the third delegate to the state convention by Doctor Vanderburgh. Dr. N. Jorgensen was nominated as alternate by Doctor Morgan. Nomination was closed, and election was carried.

Dr. Henry N. Shaw then presented the scientific paper of the evening, illustrated with lantern slides. His subject was "Repair of Cystocele," and he gave some original modifications of the usual operation, particularly designed to save the blood supply.

E. R. SCARBORO, *Secretary.*

#### NAPA COUNTY

The regular monthly meeting of the Napa County Medical Society was held Wednesday, February 4, at the Hotel St. Helena, St. Helena. The ladies of the auxiliary were present and joined in the banquet that preceded the meeting of the society.

A committee, consisting of the president, Dr. R. S. Northrop, the secretary, Dr. C. A. Johnson, and Dr. W. L. Blodgett, were selected to assist and advise the auxiliary, who held their meeting at the residence of Doctor Booth of St. Helena.

The meeting was called to order by Dr. R. S. Northrop, president, and the minutes of the previous meeting read and approved.

Dr. M. M. Booth of St. Helena was elected as delegate to succeed Dr. C. E. Sisson, who has left this county. Dr. C. A. Johnson of Napa was elected alternate.

The program of the evening was conducted by Doctors Gray, McNeil, and Blevins of Woodland Clinic. Doctor Gray spoke briefly upon x-ray therapy in skin diseases. Doctor McNeil, orthopedist, discussed Colle's fracture with especial reference to reduction and after-treatment. Dr. Blevins discussed some recent unusual obstetrical cases, their treatment and prognosis, and also discussed briefly the treatment of eclampsia. Through the courtesy of the Petrolagar Company, motion pictures were shown of the technique of Colle's fracture reduction; also gall bladder and urinary bladder surgery, an interesting and instructive film.

Members present were: E. F. Anderson, W. L. Blodgett, M. M. Booth, A. E. Chappel, G. I. Dawson, C. A. Gregory, C. A. Johnson, A. H. McLish, D. H. Murray, C. E. Nelson, R. S. Northrop, H. W. Vollmer, George Wood.

Doctors E. H. Gray, W. J. Blevins, McNeil, all of Woodland, attended as guests.

C. A. JOHNSON, *Secretary.*

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#### PLACER COUNTY

The Placer County Medical Society met at a specially called meeting at Auburn, March 5, with the president, Doctor Eveleth, presiding.

There were present the following members: Doctors Eveleth, Peers, Dunievitz, C. C. Briner, Russell, Paul D. Barnes, L. B. Barnes, Fay, Monica, Stoy Briner, Thoren, and McArthur.

Visitors present were: Dr. Lyell C. Kinney, president of the California Medical Association; Dr. J. B. Harris, president-elect of the California Medical Association; Dr. Thomas C. O'Connor, medical superintendent of the Bret Harte Sanatorium; Dr. D. M. Kindopp of Colfax; Doctors Zimmermann, Hale, Schoff, and Scatena of Sacramento; Doctors Cameron and Fraser of Weimar Sanatorium; and Mr. Hartley Peart, general counsel of the California Medical Association.

This being a special meeting, called for the purpose of receiving Dr. Kinney, Dr. Harris, and Mr. Peart, all business matters were omitted.

Doctor Kinney gave a very interesting and instructive address, touching upon the relations between the members of the local units, the delegates, and the state organization; the changed economic conditions now existing which influence very markedly the practice of medicine and the life of the individual physician; the relations which should exist between the county societies and all legislative parties, the press, and the public; and, finally, the necessity that each individual member of the county societies be thoroughly aware of the present attitude toward state medicine.

Following Doctor Kinney's very able and illuminating address, Doctor Harris outlined for the members the various bills now before the legislature having a direct or an indirect bearing on the medical profession. Doctor Harris went into detail regarding several of the more important measures.

Mr. Hartley Peart closed the meeting with a discussion of the relations between the general counsel and the California Medical Association and also between the general counsel and the individual members of the Association. He outlined in detail some of the more important legal problems which have come to him recently for solution and gave the members valuable information regarding the protection given by the State Association, particularly through the Medical Society of the State of California.

Following a general discussion the president thanked the officers for their visit and for the very stimulating and inspiring addresses which they had delivered.

Society adjourned for refreshments.

ROBERT A. PEERS, *Secretary.*

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#### SAN BERNARDINO COUNTY

The regular meeting of the San Bernardino County Medical Society was held at the County Hospital in San Bernardino, Tuesday, March 3.

The meeting was called to order by the second vice-president at 8:10 p. m. and the minutes of the previous meeting read and approved.

The application of Dr. Leonard Daly was passed by unanimous vote.

Delinquent members were notified that delinquency cancels their malpractice insurance.

It was decided that there would be no April meeting, the Southern California Medical Association and the State Association both holding meetings during that month.

The following program of the evening was then given:

Motion picture: "Acute Appendicitis," by Dr. Edward Martin of Philadelphia. Discussion opened by Dr. Carlos Hilliard.

Motion picture: "Flap and Suture Method of Cataract Extraction." Discussion opened by Dr. A. T. Gage on "What the General Practitioner Should Know About Cataract."

General discussion followed, after which refreshments were served.

E. J. EYTINGE, *Secretary.*

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#### SAN JOAQUIN COUNTY

The stated meeting of the San Joaquin County Medical Society was held Thursday evening at 8:30 o'clock, February 5, in the Medico-Dental clubrooms at 242 North Sutter Street, Stockton.

The meeting was called to order by the president, Dr. G. H. Rohrbacher. The secretary read the minutes of the previous meeting and of a special meeting of the board of directors. Both were approved.

A letter was read from the Seventh District Dental Society, Stockton, inviting the medical society to two joint meetings: one on Friday evening, March 27, to hear A. W. Meyer, M. D., of Stanford University, in a lecture on the "Anatomy and Histology of Bone of the Alveolus"; the second on Thursday, April 2, to hear Herman Becks, M. D., D. D. S., of the University of California on the subject, "Pathology of the Mouth and Parodontiums." On motion by Dr. Dewey Powell, duly seconded and carried, it was decided that the San Joaquin County Medical Society would meet on these two evenings with the Dental Society.

There being no further business the scientific program was introduced. Dr. J. J. Frey first talked on the subject, "Milk Technology and Dairy Economy."

The principal speaker of the evening, Dr. Leroy C. Abbott, was then introduced and gave an illustrated lecture on "Treatment of Crippling Conditions in Children."

Three motion-picture reels were shown illustrating the correction of deformity in a variety of conditions.

The first reel showed deformities which occur as a result of infantile paralysis. The patients were shown before and after correction of the various deformities of the upper and lower extremities. Special emphasis was laid on the importance of the prevention of deformity and relaxation of the paralyzed muscles by the proper application of support to the paralyzed limbs early in the course of the disease. It was pointed out that gross deformities develop from lack of proper treatment and that these deformities often require a number of operations for their correction before any reconstructive surgery can be carried out to improve function.

The second reel showed deformities of rickets—extreme bowlegs and after-correction. There were also several cases of extensive burns with severe deformities resulting. These deformities were corrected by operation, which involved the removal of scar, correction of the contractures and the application of skin grafts.

The third reel showed a special procedure, which had been devised by the speaker, for lengthening of the tibia and fibula in cases of marked shortening of the lower extremity. This procedure has been particularly successful in the relief of shortening which was caused by infantile paralysis, congenital malformations, and disease of the hip and knee. The lengthening secured has varied from one and one-half to three inches. There have been some complications, such as fracture through the callus during the healing process and displacements of the upper and lower ends of the fibula which have caused deformities of the foot. These latter are largely prevented by a thorough section of the fascia and interosseous membrane.

It must be emphasized that the procedure is one of very considerable magnitude. The multiple pin wounds, plus wide exposure of the medullary canal of the tibia, offer an excellent chance for the development of severe infections unless the surgeon possesses a most rigid, aseptic technique. Anyone who attempts this procedure must thoroughly familiarize himself with every detail of the method and have had considerable experience in the handling of special mechanical appliances.

The paper was discussed by Doctors Dameron, Sanderson, Wallerius, and Brendel.

The meeting was attended by a group of dairymen interested in the paper of Doctor Frey; also, a group of physicians from Sacramento especially interested in the paper by Doctor Abbott. They were: Doctors Harry Kaimer, Raymond Wallerius, Fred Scatena, Orin Cook, and Frank Brendel. Of the local society the following were in attendance: Doctors Chapman, Marnell, English, Peterson, Gallegos, Thompson, Williamson, Conzelman, Sutton, Hill, Owens, Rohrbacher, Blackmun, Dozier, Vanderleek, Doughty, M. Smyth, Blinn, Johnson, Dameron, B. Powell, Sr., Sanderson, Kaplan, B. Powell, Jr., Van Meter, Sippy, Pinney, D. R. Powell, Krout, and McGurk.

C. A. BROADDUS, *Secretary.*

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#### SANTA CRUZ COUNTY

The annual business meeting of the Santa Cruz County Medical Society was held at Hotel Reseter, Watsonville, on January 8.

Following the routine business of the evening the election of officers for 1931 was held with the following results: J. C. Farmer of Felton, president; O. C. Marshall of Watsonville, first vice-president; J. Harrington of Santa Cruz, second vice-president; S. B. Randall of Santa Cruz, secretary-treasurer. Censors: W. G. Hatch, E. Eiskamp, and A. C. Atwood. Dr. E. Eiskamp was chosen delegate to the state convention and Dr. P. T. Phillips, alternate delegate.

The application for membership of Dr. J. Johannes, who recently opened offices in Santa Cruz, was read and referred to the board of censors.

The March meeting of the Santa Cruz County Medical Society was held at the Hotel Palomar, Santa Cruz, on the evening of March 15, Doctor Farmer presiding.

Dr. Joseph Johannes of Santa Cruz and Dr. S. P. Tipton of Watsonville were voted new members of the society.

Following the routine business of the evening, Dr. Percy T. Phillips read an eulogy to his recent partner and our recently departed member, Dr. Ambrose F. Cowden. It was most fitting for Doctor Phillips to have presented this obituary, as the death of Doctor Cowden terminated an active and happy professional association of twenty-one years' duration. The passing of Doctor Cowden was a distinct loss to the community and the profession.

The speaker of the evening, Dr. Chauncey D. Leake of the department of pharmacology, University of California, presented a paper on "Recent Advances in Modern Pharmacology." This proved to be one of the most interesting and instructive papers the society has ever been favored with, and we heartily recommend Doctor Leake and his subject to other societies which might be interested in a modern, sensible and instructive presentation of the important subject of chemical therapeutics.

SAMUEL B. RANDALL, *Secretary.*

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#### SANTA BARBARA COUNTY

The regular meeting of the Santa Barbara County Medical Society was held in the Bissell auditorium of the Cottage Hospital on Monday evening, March 9, with President H. J. Ullmann in the chair. After approval of the minutes of the previous meeting, Doctor Ullmann introduced Dr. Alson R. Kilgore of San Francisco, who gave an extremely interesting talk on "Breast Lesions with Precancerous Potentials," demonstrating his points with gross specimens and lantern slides.

His talk was discussed and questions asked by Doctors Brown, Robinson, Pierce, Ullmann, Nuzum, Evans, Schurmeier, and Williams.

The society then went into executive session, and communications from the California Medical Society regarding legislation were read and ordered filed.

An invitation from the Western Section of the American College of Surgeons to attend their meeting at Oakland April 23, 24, 25, and 26, was read.

It was then moved by Doctor Williams, and seconded by Doctor Brown and unanimously carried, that Dr. Harold Sidebotham be elected an honorary member of the society.

The application for membership in the county society of Dr. August L. Mollath of Guadalupe was read and was referred to the board of censors.

Dr. E. L. Markthaler, chairman of the Public Relations Committee, then read a report of their meeting regarding the public health program relative to endocrinology being carried on by the county health department, and the establishment of a staff in the Santa Maria hospital.

It was moved, seconded and carried, that the report be adopted and filed in the minutes of this meeting.

WILLIAM H. EATON, *Secretary.*

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#### SONOMA COUNTY

The regular meeting of the Sonoma County Medical Society was held at the Sonoma Mission Inn on March 12. The members of the society met with those of the county medical societies of Marin, Napa, and Solano counties. The purpose of the joint meeting was to welcome Dr. Lyell C. Kinney, president of the California Medical Association, and President-elect Junius B. Harris. An excellent dinner was served at 7 p. m., which was enjoyed by fifty physicians.

The meeting was then called to order by President A. Morse Bowles, who welcomed the officials of the California Medical Association and the members of the other county societies. Doctor Rogers introduced the speakers.

Dr. Junius B. Harris of Sacramento, chairman of the Committee on Public Policy and Legislation, gave an interesting résumé of the various bills affecting the medical profession now up before the state legislature. He urged that the corresponding committee of each county society keep in touch with their representatives and stressed the fact that no county committee was to take any independent action, but was to work always through the state committee.

Doctor Kinney was then introduced and gave a most interesting and instructive talk. He is striving for a more intimate relation between the president's office and the various county societies, and is endeavoring to visit each county society in the state. He stressed the importance of a county society in each county, and stated that our State Association will be no stronger than its component county societies.

Each county society should promote public welfare and public health activities; undertake public health education, and contact state legislators through its Committee on Public Policy and Legislation.

He discussed briefly the question of state medicine and urged the medical profession to be in a position to adopt and dictate the policy of such a system, should it become a reality. Twenty-six countries in Europe and South America have already established state medicine.

He outlined the essentials of the future practice of good medicine as follows:

Preserving the personal relation between doctor and patient without governmental or other type of intervention.

Giving the best medicine to all classes, regardless of cost.

Preserving the ethical and economic status of physicians and keeping abreast with medical progress and the advancement of scientific medicine.

Doctor Kinney was heartily applauded for his splendid address. Following a few words of thanks by President Bowles, the meeting adjourned.

The following Sonoma County members were present: Doctors Wheeler, Baldwin, Patterson, Reiss, Rogers, Bowles, Yates, Seawell, Haskell, Peoples, Butler, Finnerty, Fleissner, Spear, Marsh, Shipley, Bogle, Carlson, and Pleth.

T. HUBERT REISS, *Secretary.*

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#### VENTURA COUNTY

The February meeting of the Ventura County Medical Society was held on Tuesday, February 10. The meeting was called to order by President Wright at 8 p. m.

Members present were: Doctors D. D. Clark, King, Smolt, Bardill, Achenback, W. S. Clark, Felberbaum, Wright, Little, Hendricks, Rhymes, Mosher, Shore, Homer, and Armitstead.

The application of Dr. Artemas J. Strong was read and referred to the State Association for approval, to be then placed on file for the six months' waiting period.

There were no other transactions except a brief discussion in regard to a motion picture projector. No action was taken.

Business transactions were followed by an illustrated lecture on "Common Skin Diseases," which was well received. Doctor Anderson covered the diagnosis and treatment of conditions discussed.

After the completion of the scientific program, the meeting was adjourned.

R. B. ARMITSTEAD, *Secretary.*

## CHANGES IN MEMBERSHIP

## New Members

**Alameda County**—Caroline Cook Coffin, Eric, Lilien-  
crantz, Edward P. Rankin, Abilio Reis.

**Butte County**—J. W. Blemer.

**Fresno County**—Reginald Archie Hunt, Frank M.  
Sprague, Lester Ralph Nielsen.

**Humboldt County**—Edwin D. Barnett, Wilson Stege-  
man.

**Los Angeles County**—

George Oscar Berg  
Hiram M. Currey  
Herbert William Dasse  
Joseph William Dassett  
Leon O. Desimone  
William J. Endres  
Raoul P. Esnard  
Joseph G. Evans

Carl Hamann Gans  
David Garrison Ghrist  
Morris Richard Gordon  
Robert Kenneth Gustafson  
Colby Hall  
Rowland H. Harris  
Robert D. Hyde  
Carlyle P. Imerman

**Marin County**—Wilson Parker Goddard.

**Monterey County**—Frank E. Wiebe.

**Napa County**—Edmund Forrest Anderson.

**Riverside County**—George Wayland Coon, Harold  
William Naekel.

**Sacramento County**—Paul Warren Frame, Ralph  
Shaw Graham, Hilding Rudolph Johnson, Hermann  
Edward Lorenz.

**San Benito County**—Joseph M. O'Donnell.

**San Bernardino County**—Cecil Everett Burk, Byron  
F. Mock, Leonard Elmer Daly.

**San Francisco County**—Leonard W. Buck, Frederick  
George Niemand, John F. Rickard.

**San Luis Obispo County**—Horace Hagen, Charles  
Henry Law, John Roy Ranson.

**San Mateo County**—Dewey F. Brown, Harry E.  
Mason, Meade Mohun, Hartzell H. Ray.

**Siskiyou County**—Peter Paul Baron, Joseph Langer.

**Solano County**—Arthur R. Thompson.

**Sonoma County**—Julius T. Rose.

**Tulare County**—Frank Ralph Guido, John R. Hicks,  
William A. Johnstone, Arda H. Wightman.

**Yuba-Sutter County**—Irving Wilber Higgins.

## Resignations

Elizabeth Arthurs, Phillis P. Bourne, Hans B.  
Christiansen, Anna M. Flynn, Robert L. Groves,  
Russell L. Guffey, Elizabeth Keys, Ernest H. Nast,  
all from San Francisco.

Ruth Burr, Robert Hector, Albert K. Merchant,  
Helene E. Schutz, all from Alameda County.

Thomas M. Evans, from San Diego County.

## Transfers

Lela J. Beebe, from Yolo to Santa Barbara County.  
Roger U. Campbell, from San Francisco to Contra  
Costa County.

M. Hugo Childress, from Alameda to Sacramento  
County.

Walter B. Felger, from Sacramento to Los Angeles  
County.

Thomas W. Hagerty, from Sacramento to San  
Joaquin County.

W. H. Kellogg, from San Francisco to Alameda  
County.

Lawrence R. Leidig, from Mendocino to Tulare  
County.

Frederick H. Olberg, from Butte to Shasta County.

Thomas Rea, from Alameda to Siskiyou County.

Joseph P. Schell, from Butte to Santa Clara  
County.

Herbert F. True, from San Francisco to Sacra-  
mento County.

Paul R. Walters, from Tulare to Alameda County.

## Death

**Garland, James Asa.** Died February 15, 1931, age  
60 years. Graduate of Northwestern University Medi-  
cal School, Chicago, 1896. Licensed in California,  
1914. Doctor Garland was a member of the Los  
Angeles County Medical Association, the California  
Medical Association, and the American Medical As-  
sociation.

## OBITUARY

## Ambrose Franklin Cowden

1878-1931

It is indeed a sad, sad duty for me to have to speak  
to you, his friends, of the death of Dr. Ambrose F.  
Cowden. For this opportunity to pay tribute to  
Doctor Cowden, as I knew him in life, I am very  
grateful. I feel that I may evaluate his character as  
no one else can—his attitude toward life, mankind,  
and his profession.

For twenty-one years we were partners in the cares  
and responsibilities of our profession. The satisfac-  
tions and joys in the fight against sickness and death  
were mutual, and each knew that the disappointments  
of defeat were equally shared. We were more than  
friends, and to him I give the great measure of credit  
for the happiness of an association such as ours.

"Life is a sheet of paper, white  
Whereon each man of us may write  
His word or two—and then comes night."

The doctor's passing was that of a man who had  
not been allotted the long span of life given to many,  
but his professional years were intense and crowded  
with service to mankind. He accomplished the best  
that a physician can hope for, and was still writing  
"his word or two" when called so suddenly to rest  
before the sheet was filled. Being no respecter of  
persons, "Death, great proprietor of all, will seize the  
doctor, too."

When death calls us we may be proud if we can  
be sure of love and devotion such as that in which  
Doctor Cowden was held by the people of the com-  
munity in which he lived, and of respect such as that  
Doctor Cowden held from his confrères with whom  
he worked. There is no greater honor than the love,  
respect and affection of one's intimate associates.

He was the best type of physician, and his splen-  
did ability was coupled with that love of mankind  
which makes their joys his joys and their sorrows  
his deepest concern.

Ambrose Franklin Cowden was born at Forest  
Hill, Placer County, California, March 1, 1878; re-  
ceived his degree of Doctor of Medicine from the  
University of California in the year 1905; served as  
intern one year and resident two years at St. Luke's  
Hospital, San Francisco, coming then to Santa Cruz  
to practice.

No citizen was more respected or better loved, nor  
ever could be by his patients. No neighbor was ever  
more appreciated. The profession and this society  
have lost a valuable member and one whose memory  
will last. He was a gentleman and a loyal friend; his  
integrity was above question.

(Signed) PERCY T. PHILLIPS.

THE WOMAN'S AUXILIARY OF THE  
CALIFORNIA MEDICAL  
ASSOCIATION

On February 24 an executive board meeting was  
held at the Jonathan Club in Los Angeles. Mrs.  
Percy, the state president of the auxiliary had invited  
all of the members of the board to be her guests at  
lunch and for the day. The meeting was a very de-  
lightful one, as those who were fortunate enough to  
be able to attend will recall. Those present were:  
Mesdames J. M. McCullough and C. R. Blake of  
Contra Costa County; W. L. Blodgett of Napa  
County; F. E. Coulter, G. Emmett Raitt, Dexter R.  
Ball of Orange County; W. H. Geistweit, Jr., and  
E. A. Blondin of San Diego County; H. J. Profant  
of Santa Barbara County; F. E. Clough of San Ber-

\* As county auxiliaries to the Woman's Auxiliary of  
the California Medical Association are formed, the names  
of officers should be forwarded to the state secretary-  
treasurer, Mrs. Dexter R. Ball, 2419 Bonnie Brae Street,  
Santa Ana, and to the California Medical Association  
office, Room 2004, 450 Sutter Street, San Francisco. Brief  
reports of county auxiliary meetings will be welcomed  
for publication. For roster of auxiliaries, see advertising  
page 6.

nardino County; Eliot Alden and James F. Percy of Los Angeles County; A. M. Henderson of Sacramento County.

It was gratifying to greet members from the four corners of the state, and was proof of the interest that is being taken in the auxiliary.

The program chairman, Mrs. F. E. Coulter of Orange County, gave a report and noted that the Woman's Auxiliary of the Oregon Medical Association has a very similar outline for study.

A letter from Mrs. T. A. Stoddard of San Francisco, state second vice-president of the Woman's Auxiliary, stated that since there was no county auxiliary formed in San Francisco, the president of the San Francisco County Medical Society, Dr. Charles P. Mathé, and the chairman of the Committee of Arrangements of the Medical Association, Dr. T. Henshaw Kelly, had appointed a special committee for the entertainment of visiting women. Mrs. Frank Hinman is chairman, and very full plans for the entertainment of visiting women are being developed.

Two county auxiliaries have been formed this year—those of Sacramento and San Luis Obispo.

After lunch a new constitution for the auxiliary was discussed and suggested changes were noted. The next convention, in San Francisco, will be presented with a draft as approved by the executive board of the California Medical Association and by the board of directors of the Woman's Auxiliary.

EDNA M. BALL, *Secretary-Treasurer.*

## NEVADA STATE MEDICAL ASSOCIATION

W. A. SHAW.....	President
R. P. ROANTREE, Elko.....	President-Elect
H. W. SAWYER, Fallon.....	First Vice-President
E. E. HAMER, Carson City.....	Second Vice-President
HORACE J. BROWN.....	Secretary-Treasurer
R. P. ROANTREE, D. A. TURNER, S. K. MORRISON.....	Trustees

### COMPONENT COUNTY SOCIETIES WASHOE COUNTY

The Washoe County Medical Society held its regular monthly meeting on the night of March 10 at the Nevada State Building. Doctor Creveling, president, officiated.

After the usual routine of business was dispensed with, the secretary read the approved applications of Doctors Welsh and Miller, both of Reno, for membership, which were accepted by the society. Resolutions of respect by the committee appointed for the death of Dr. J. B. Hardy, who died of pneumonia in Reno on February 19, 1931, were read and copies of same sent to relatives of deceased, and a copy to be spread on the minutes of the society.

There was a general discussion of the various sites suitable for the future veterans' hospital soon to be constructed in Nevada. Also, as this is the session of the Nevada state legislature, the need of a more active representation at the Capitol of an energetic judiciary committee. The Osteopathic Bill pending, to restrict the function of osteopathic physicians to the work of osteopathy, was discussed, but owing to the fact that the regular establishment of physicians and surgeons in Nevada are so willing that "James" should do it, little has been accomplished in progressive legislation.

Business and discussions disposed of, the society, which was represented with twenty members and six visitors, proceeded to enjoy an Eastman film made under the auspices of the American College of Surgeons. The film was the professional picture of "Acute Appendicitis," offered by that company. The film was valuable and instructive.

THOMAS W. BATH, *Secretary.*

## UTAH STATE MEDICAL ASSOCIATION

WILLIAM L. RICH, Salt Lake City.....	President
R. A. PEARCE, Brigham City.....	President-Elect
M. M. CRITCHLOW, Salt Lake City.....	Secretary
J. U. GIESY, 701 Medical Arts Building, Salt Lake City.....	Associate Editor for Utah

### COMPONENT COUNTY SOCIETIES BOX ELDER COUNTY

The meeting of the Box Elder County Medical Society was held on the evening of February 21.

The paper of the evening was by Doctor Luke on the subject of "Common Colds." The doctor pointed out the great economic loss entailed by colds, and stressed the point that many other diseases follow upon the condition commonly called a cold. He emphasized the fact that colds are an infectious condition and are spread from person to person, and often appear in epidemic form. Contagion is greatest in the early stages. Doctor Luke closed with a discussion of the use of preventive vaccines.

The paper was greatly enjoyed by those present, and it was the consensus of opinion in the meeting that it should be printed in the county papers.

R. A. PEARCE, *Secretary.*

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### SALT LAKE COUNTY

The regular meeting of the Salt Lake County Medical Society was held on Monday evening, February 23, at the Salt Lake General Hospital. Twenty-two members and five visitors were present.

The meeting was called to order at 8:05 o'clock by President F. M. McHugh, and the minutes of the previous meeting read and accepted.

The clinical program was turned over to R. J. Alexander, president of the staff of the Salt Lake General Hospital. The following program was presented:

Acute Bacterial Endocarditis and Quinidin Treatment of Auricular Fibrillation, by Ralph Tandowsky; Partial Gastrectomy for Gastric Ulcer, by R. J. Alexander; Pemphigus Chronica, by W. L. Rich; Emphyema, with Optochin Hydrochlorid, by W. H. Rothwell; Preliminary Report of Avertin Anesthesia (by request), by R. O. Johnson; and Bullet in Lumbar Vertebra, by L. C. Snow.

L. L. Daines was unanimously elected an associate member.

J. C. Brown presented a letter from the State Industrial Commission which was sent to the Utah State Medical Association and referred to charges made by members of the medical profession. After discussion by C. L. Shields, M. M. Critchlow, and S. L. Baldwin, S. L. Baldwin suggested that a copy of this letter be sent to every member of the Utah State Medical Association by the secretary of that organization.

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The regular meeting of the Salt Lake County Medical Society was held Monday, March 9, at the Newhouse Hotel. Forty members and one visitor were present.

The meeting was called to order at 8 p. m. by President F. M. McHugh, and the minutes of the previous meeting were read and accepted without correction.

Dr. Wilkin Blood spoke of his recent trip to Europe, with particular reference to European pediatrics, and Dr. Fuller B. Bailey discussed his recent European trip from the standpoint of the internist. These papers were discussed by Doctors J. Z. Brown, W. R. Tyndale, E. M. Neher, and C. C. R. Pugmire.

Doctors C. L. Shields and E. M. Neher reported for the Committee on Medical Economics. Dr. W. L. Rich moved that the committee be continued and be instructed to carry on further study of this matter. Motion seconded and carried.

Dr. J. Z. Brown moved that a letter be sent to the Industrial Commission stating that the society wished to coöperate with this commission in regard to charges made by members of the society. Motion seconded and carried.

Dr. D. G. Edmunds, chairman of the Law Enforcement Committee, read a letter from the American Medical Association indicating their interest in the recent efforts of this committee.

Dr. C. L. Shields moved that the Committee on Public Policy and Legislation meet with the directors of the Congregational Church to lay before them some facts regarding recent quasi-medical lectures. This motion was discussed by Doctors Ray Woolsey, J. A. Phipp, J. Jeidell, D. G. Edmunds, James Kerby, and G. H. Pace. This motion was lost.

Dr. M. M. Critchlow moved that a letter be sent to the Denver and San Francisco medical societies informing them of the contemplated lecture courses to be given by R. I. Shadduck in these cities. Motion seconded and carried.

Dr. Ray Woolsey read a letter from K. S. L. regarding broadcasting fees, and moved that the society accept the offer of a commercial house to announce the new telephone classification of doctors. This motion was lost.

The application of Dr. J. M. Schaffer was read. Dr. Ray Woolsey moved that the application be acted upon in the usual way. Motion seconded and carried.

BARNET E. BONAR, *Secretary.*

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#### UTAH COUNTY

The regular bimonthly meeting of the Utah County Medical Society was held at the Hotel Roberts on Wednesday evening, February 18, at 6:30 o'clock.

As usual, a very enjoyable supper preceded the business and scientific program.

Dr. T. A. Flood of Salt Lake City read a very entertaining and instructive paper on "Certain Laboratory Procedures that are Essential in Diagnosis."

CHARLES M. SMITH, *Secretary.*

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#### WEBER COUNTY

The regular meeting of the Weber County Medical Society was held February 26 at the Hotel Bigelow. A banquet preceded the meeting at which President E. P. Mills presided.

Dr. I. K. Cummings, formerly a member of the Hawaii Medical Society, was unanimously voted a member of the Weber County Medical Society.

Dr. M. J. Seidner gave an interesting and instructive report of the various European clinics which he had recently attended.

CONRAD H. JENSON, *Secretary.*

**Cotton Mather and Smallpox.**—History tells us that at divers times and in sundry places scientific endeavor has suffered at the hands of the Church, or at the instigation of members of the Church, either lay or ecclesiastic. In fact, today public health is being menaced by ignorant and self-appointed agents of the divine plan in this particular and important public problem. Tradition has it that up through the mists and clouds of superstition and ignorance, science and scientific men have been the torch bearers of truth, letting in their light on dark places.

An extremely interesting sidelight upon this time-honored tradition is to be found in a recent biography of Benjamin Franklin, by Bernard Fay, a French scholar.

About 1721 A. D. a great discussion was in progress throughout the world: should inoculation be used to combat smallpox. At that time inoculation was known and had been used experimentally in regions of the Near East, and especially in Turkey. There resided in Constantinople Lady Mary Montagu, wife of the English Ambassador to Turkey, who became an inoculation enthusiast, so that in 1719

she brought this discovery to London. Shortly thereafter there appeared in the proceedings of the Royal Scientific Society of London a study of inoculation as it was practiced in the Levant and, in due course of time, copies found their way to Boston and came into the hands of Mather and Douglas. Mather, the exalted enthusiast, became an immediate partisan, while Douglas, with his solid scientific culture, thought such an idea from such a backward and superstitious community to be absurd.

After two years of almost daily predictions of dire calamity by Mather, the blow fell. In May 1721, eight cases of smallpox appeared in Boston. This grew to an epidemic and the disease raged the entire summer, the entire winter, and on into the spring of 1722. During this time a violent struggle was in progress between the inoculators, headed by Mather, and the anti-inoculators with Douglas and his friends at the helm. Franklin's brother James lent the support of his paper to the radical group, with whom he was in sympathy. This paper was called the New England *Courant*. Benjamin, at that time a boy of sixteen, was setting type for his older brother. Early during the epidemic there appeared a statement on its pages: "The chief design of the New England *Courant* is to oppose the doubtful and dangerous practice of inoculating the smallpox." A club was organized by the so-called liberals, called "The Society of Physicians Anti-Inoculator." The members of this group swore, above all, to abuse Mather. By order of the society, one Dalhonde published a statement in which he affirmed that he had seen this matter tried out in the French Army twenty-five years ago with deplorable results. In every number of the *Courant*, Mather was attacked as well as the ministers and any others who were assisting him to inoculate the terrified inhabitants. Phrases like the following were common: "Most of the ministers are for it and it induces me to think it is from the Devil, for he often makes use of good men as instruments to obtrude his delusions on the world."

To further torment Mather this group attacked his membership in the Royal Scientific Society of London by publishing a list of the members that was posted in public, showing that his name was not upon the official roster. (It was true that he was a member, but before being listed he must appear personally in London to be officially received.) Not only did this accusation against Mather serve to enrage him more than anything else had succeeded in doing, but it influenced many neutrals to the support of the anti group. Finally a bomb was thrown through Mather's window during the early hours of the morning where a sick minister was lodged at the time and about to be inoculated. An insulting note was attached to the bomb: "Dam you, I will inoculate you with this, with a pox to you." Mather was saved because in transit the fuse had fallen out, which bit of good fortune he attributed to the providence of God. His reply to this last and attempted physical attack, aided by a group of churchmen favorable to inoculation, was made by pamphlet: "A vindication of the ministers of Boston from the abuses and scandals lately set upon them." It appears that at about this time government agents became interested and the sounds of battle died away.

The results of inoculation during this epidemic are highly interesting although by no means conclusive. The high point of interest is to note the position of the profession of that date, if so it could be dignified, in this matter. Also the leadership of the inoculators, a Puritan preacher, who in those days would have been quite justified in opposing inoculation upon the ground that the Almighty had sent this scourge upon the people for some good purpose known only to Him and Mather. There were 6045 cases of smallpox. The Mathers inoculated 286 and in this group there were six deaths, a mortality rate of about two per cent. There were 844 deaths in the balance, the group whose interests had been fostered by the anti-inoculators, a mortality rate of about 14 per cent.—Wilfred S. Dennis, M. D., *Colorado Medicine*, September, 1930.

## MISCELLANY

Items for the News column must be furnished by the twentieth of the preceding month. Under this department are grouped: News; Medical Economics; Correspondence; Department of Public Health; California Board of Medical Examiners; and Twenty-five Years Ago. For Book Reviews, see index on the front cover, under Miscellany.

## NEWS

**Sectional Meeting of American College of Surgeons.**—The states of California, Nevada, Arizona, Utah, Idaho, Washington, Oregon, and British Columbia will be represented at the sectional meeting of the American College of Surgeons which will be held in Oakland, April 23-26, 1931. All physicians are cordially invited to attend these clinics and meetings. Oliver D. Hamlin, M. D., is general chairman of the local Committee on Arrangements, and Charles Alfred Dukes, M. D., is secretary.

### CLINICS

Clinics will be held each morning of the 23rd, 24th, and 25th, from 8 to 11 a. m. in the Samuel Merritt, Highland, Fabiola, Peralta, and Providence hospitals. Full programs of clinics will be distributed from the registration desk in the Hotel Oakland.

### CLINICAL ADDRESSES

From 11:30 to 12:30 in Hotel Oakland the following clinical addresses by invited guests will be given:

#### Thursday, April 23

**Ballroom**—The Diagnosis and Treatment of Cancer—Burton James Lee, M. D., clinical professor of surgery, Cornell University.

**Blue Room**—The Significance of the Ocular Functions in Aviation Based Upon our Experience Since the War—Harvey J. Howard, M. D., professor of ophthalmology, Washington University School of Medicine, St. Louis.

Bronchoscopy and Esophagoscopy in Otolaryngology—Louis Henry Clerf, M. D., professor of bronchoscopy and esophagoscopy, Jefferson Medical College, Philadelphia.

#### Friday, April 24

**Ballroom**—Surgery of the Hand—Treatment of Infections and Injuries—Allen B. Kanavel, M. D., professor of surgery, Northwestern University Medical School, Chicago.

**Blue Room**—Diagnosis and Treatment of Cancer of Larynx—Louis Henry Clerf, M. D.

Value of, and the Indications for, Typhoid Vaccine Therapy in Eye Diseases—Harvey J. Howard, M. D.

#### Saturday, April 25

**Ballroom**—Surgical Indications in Gastric and Duodenal Ulcers—Harry M. Richter, M. D., professor of surgery, Northwestern University Medical School, Chicago.

Diagnosis and Treatment of Pulmonary Complications Following Tonsillectomy—Louis Henry Clerf, M. D.

Trachoma—Harvey James Howard, M. D.

### HOSPITAL CONFERENCES

**Thursday, April 23**—Municipal Auditorium Theater (2 to 4:30 p. m.).

**Friday, April 24**—Providence Hospital, Assembly Room, Nurses Home (9:30 to 12 noon).

**Saturday, April 25**—Highland Hospital (9:30 to 12 noon).

### SCIENTIFIC MEETINGS

2 to 5 p. m.—Ballroom

**Friday, April 24 and Saturday, April 25**—Speakers will be C. Jeff Miller, M. D., New Orleans; Vilray P. Blair, M. D., St. Louis; Philip H. Kreuscher, M. D., Chicago; Burton James Lee, M. D., New York; Frederick A. Besley, M. D., and Harry M. Richter, M. D., Northwestern Medical School.

### ROUND TABLE CONFERENCES ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

2 to 5 p. m.—Blue Room

**Friday, April 24 and Saturday, April 25**—Conferences will be conducted by Harvey J. Howard, M. D., St. Louis, and Louis H. Clerf, M. D., Philadelphia.

### EVENING SESSIONS

**Dinner**—6:30 p. m., Thursday, April 23, ballroom of Hotel Oakland.

**Community Health Meeting**—8 p. m., Friday, April 24, Municipal Auditorium Theater.

### COMMUNITY HEALTH MEETING

Sunday, April 26, 3 p. m.—Greek Theater  
Berkeley

Music by University of California band.

Welcome—Robert T. Legge, M. D., Berkeley.

Adding Years to Your Life—Franklin H. Martin, M. D., director general, American College of Surgeons, Chicago.

Modern Surgery Not to Be Feared—C. Jeff Miller, M. D., professor of gynecology, Tulane University of Louisiana School of Medicine, New Orleans.

What You Should Know About Cancer—Burton James Lee, M. D.

Marvels of Modern Medicine—Allen B. Kanavel, M. D.

The Business of Keeping Well—Judge Harold M. Stephens, Berkeley.

To Whom Shall You and I Entrust Our Lives When Sick or Injured—Mark A. Matthews, D. D., pastor of First Presbyterian Church, Seattle.

The Rôle of the Hospital in Human Salvage—Mr. Robert Jolly, superintendent Baptist Hospital, Houston, Texas.

**Public Health Meeting to Close Oakland's American College of Surgeon's Sectional Convention.**—The Greek Theater, in the grounds of the University of California, will be the scene of a gathering in the interest of public health, unique both in its setting and in the choice of its speakers.

Governor Ralph will open the meeting. Robert Sproul, president of the University of California, and Mr. Robert Jolly, president of the American Hospital Association, are among those who will address this meeting.

Following a three days' intensive program of clinics and papers, to which all physicians, members of the College of Surgeons or not, are invited, the sectional convention of the American College of Surgeons will close its 1931 session with this great gathering on Sunday afternoon of April 26, to which not only physicians, public health workers, nurses, and others interested in the health of the public are invited, but to which all interested citizens will be most cordially welcomed.

**The Spring Meeting of the Southern California Medical Association** will be held at Hotel Del Coronado on Friday and Saturday, April 10 and 11.

The guest speakers will be Walter Alvarez, M. D., of the Mayo Clinic, who will talk on Friday night and give a dry clinic Saturday morning; Emile Holman, M. D., professor of surgery at Stanford University; and Professor Von Groer of the University of Lemberg, Poland, and Dr. Edgar Mayer, celebrated author of heliotherapy.

**Pacific Coast Oto-Ophthalmological Society.**—This association will hold its next annual session in Los Angeles, May 28-30, with headquarters at the Hotel Ambassador.

The program this year is being prepared by some of the great teachers of this country and Europe. For the ophthalmologists, Dr. Luther Peter of Philadelphia will have two papers. Dr. Otto Barkan, professor at Stanford University, Dr. Joseph McCool, professor at University of California, and Dr. Frederick Kiehl, professor at University of Oregon, will give papers.

For the otolaryngologists, Dr. R. Clyde Lynch of New Orleans will give three interesting papers, one of which correlates the nose and throat and eye. Dr. Haslinger of Vienna, Dr. Joseph Beck of Chicago, Dr. Harrington Graham and Dr. Wallace Smith of San Francisco, and Dr. George Coates of Philadelphia will give papers.

In addition to these papers from men who are connected with some of the largest teaching institutions, the members of the Board of Otolaryngology and others will conduct the round table discussions, where all will have the opportunity to discuss their problems.

The American Board of Otolaryngology will conduct its examination at the Los Angeles County General Hospital on May 27.

**The Western Hospital Association Meeting** will be held in Oakland, April 20-23. G. W. Olson, president of the Western Hospital Association, states that this All-Western Hospital Association will bring allied organizations together in one of the greatest meetings of hospital workers ever held in the West.

Four preceding meetings have been held, the organization meeting in May 1927 at Los Angeles. In 1928 the meeting of the Western Hospital merged its interest with the American Hospital Association meeting in San Francisco in August. Portland held the 1929 meeting in October, and a four-day joint session of the British Columbia and Western Hospital Association was held in Vancouver in 1930.

**Semiannual Alumni Day at University of California Medical Department.**—The semiannual alumni day was held on Tuesday, March 24, 1931, at the University of California Hospital, Parnassus and Third avenues. A morning session of pediatric ward rounds and clinics by Doctor Smythe and a medical conference conducted by Dr. William Kerr was followed by a buffet luncheon in the faculty clubrooms at the hospital. From two to four addresses were given in Toland Hall by Doctors Fletcher B. Taylor, Charles L. Connor, John J. Sampson, Stacey R. Mettier, William J. Kerr, and Chauncey D. Leake.

The morning session clinics, from 8:30 to 11:30 o'clock on neurosurgery and general surgery, were conducted by Dr. Howard C. Naffziger and staff; on gynecology, by Dr. Frank W. Lynch and Dr. Alice Maxwell; on urology, by Dr. Frank Hinman, Dr. Sidney Olsen, and Dr. Clark M. Johnson; on otorhinolaryngology, by Dr. Wallace B. Smith; on ophthalmology, by Dr. Joseph L. McCool; and on orthopedic surgery, by Dr. LeRoy C. Abbott and staff.

**Scheduled Appointments for Clinic Patients.**—Three years ago the university adopted a new method of handling the thousands of patients who come to its clinics for treatment because they have not sufficient funds to pay regular physicians' fees. Instead of seating them on benches to await their turns, sometimes a matter of hours, it was decided to make definite time appointments for each patient, just as is done in private doctors' offices.

By this system the patient is relieved of the necessity of coming early in the morning and waiting. He or she comes at a definite time and leaves promptly. It had previously been thought that such a system would be unworkable because of the tremendous number of patients cared for. But it has now been

found that seven hundred patients can be handled each day with less confusion than under the old system.

But most important of all, careful estimates place the saving of time to these thousands of patients, during the past three years, at 291,000 hours. Computing eight hours to a working day, and six days a week, this means a saving of more than 175 solid years of labor, two and one-half full lifetimes. At the rate of \$4 a day for this time, the new system saves more than \$145,000 every three years.

This change in procedure is of particular value because the people who come to the out-patient department are either working for very small wages and in need of every cent, or they are out of work and in need of every hour to look for work. From the staff point of view the new system has also been of help in that it gives more time for the location of case records in the files, before the patients arrive.—*University of California Clip Sheet.*

**The American Public Health Association** announces its sixtieth annual meeting, September 14-17, in Montreal, Quebec, with the Windsor Hotel as headquarters.

The association has not held a meeting in Canada since 1908 and public health workers from the Dominion and from the United States are invited to take advantage of this opportunity for closer contact. The program is being planned with the progress and needs of both countries in mind.

Meetings of four other organizations—American Association of School Physicians, Conference of State Sanitary Engineers, International Society of Medical Officers of Health, and the International Association of Dairy and Milk Inspectors—will take place during or immediately preceding the sessions of the American Public Health Association in Montreal.

For further information address the American Public Health Association, 450 Seventh Avenue, New York, N. Y.

**Pacific Coast Surgical Association.**—At the last meeting of the Pacific Coast Surgical Association, which was held at Victoria, B. C., February 27 and 28, the following were elected as officers: Rea Smith of Los Angeles, president; Charles M. Fox of San Diego, first vice-president; Raymond E. Watkins of Portland, Oregon, second vice-president; Edgar L. Gilcrest of San Francisco, secretary-treasurer.

Rexwald Brown of Santa Barbara, Philip K. Gilman of San Francisco, J. Tate Mason of Seattle, Wash., A. Aldridge Matthews of Spokane, Wash., and George W. Swift of Seattle, Wash., were elected members of the Council.

The association will meet next year at Coronado the last week-end in February. Clinics will be held in Los Angeles the two days preceding this meeting.

**The Fiftieth Semiannual Meeting of the California Northern District Medical Society** was held at the Woodland Clinic, Tuesday, March 10.

Fifty doctors attended the morning medical and surgical and nose and throat clinics; and eighty-four attended the luncheon and scientific program after the president's address by George H. Sanderson, M. D., Stockton.

"The Newer Rationale of Acid Milk Feedings" was presented by Francis Scott Smyth, M. D., professor of pediatrics, University of California; "Suggestions from Analysis of the Last Five Years' Experiences with Appendicitis," by Fred R. Fairchild, M. D., Woodland Clinic; and "Recent Developments in the Treatment of Poliomyelitis" (moving pictures), by Edwin S. Schultze, M. D., professor of bacteriology, Stanford University.

The next meeting will be held in Sacramento the second Tuesday in October, it being customary to have two meetings a year, with the fall meeting always in that city.

## MUCH IN LITTLE \*

Headache, choked discs, and vomiting mean brain tumor.

Exophthalmos, tachycardia, and tremor mean exophthalmic hyperthyroidism.

Hemoptysis means tuberculosis until proven otherwise. Heart failure a frequent cause.

Hematuria means malignancy until proven otherwise. Calculus a frequent cause.

"T. T. M. M. and I" (typhoid, tuberculosis, measles, malaria, and influenza) give no leukocytosis.

Suspect gall-stones in the "4 F" females (fair, fat, forty, and gaseous).

The "old man's disease" (prostatism) must be suspected in the fifties. Examine for urinary retention.

Hemorrhoidectomy is a malignant practice when hepatic cirrhosis with portal back-up is present.

Make thorough examinations of all patients, because:

To have a consultation show one  
A blue line on the gum,  
Or a fragile mass in the rectum,  
Makes the family doctor glum.

## TWENTY-FIVE YEARS AGO †

### EXCERPTS FROM OUR STATE MEDICAL JOURNAL

Vol. IV, No. 4, April 1906

*From some editorial notes:*

*The Big Thieves.*—That the mind of the physicians is without commercial bent, is so well known as scarcely to require restatement; for, in the words of the "sure thing" operator, doctors and preachers are "good things." As a result of this unfortunate lack of business ability, physicians always have been and doubtless always will be imposed upon by those gentrified for whom "commercialism" is the first and the last word, and who know not the meaning of "professionalism." . . .

\* \* \*

*Let Us Help.*—Other things being equal, it is no less than right that we should lend the weight of our influence and give our patronage to those manufacturers who indicate a desire and an intention to help us in the present fight against fraud, secrecy, and graft in the nostrum business. . . .

\* \* \*

*The Next Legislature.*—There are some bills which we may safely assume will be introduced into the

\* Members of the California, Nevada, and Utah Medical Associations are invited to contribute to this column of aphorisms, which will appear from time to time in California and Western Medicine, as sufficient copy accumulates. The aphorisms in this issue were sent in by John William Shuman, M. D., Los Angeles.

† This column strives to mirror the work and aims of colleagues who bore the brunt of state society work some twenty-five years ago. It is hoped that such presentation will be of interest to both old and recent members.

next legislature, and we might as well think them over and begin to prepare for them. . . .

*From a Notice of the 1906 Annual Session:*

The next annual meeting of the state society will be held in San Francisco, the entire week, beginning Tuesday morning, April 17, 1906. . . .

. . . The committee would further announce that the following time limit has been placed on all contributions: orations, thirty minutes; scientific papers, fifteen minutes; discussions, five minutes. A bell will be rung in each case, one minute before the time expires.

. . . Members finding subjects of interest in the papers enumerated below will please send their names and choice of subjects to the chairman of the committee, that they may be called upon to enter into the discussions. . . .

*From an article on "The Motor Complications of Herpes Zoster" by Albion Walter Hewlett, M. D., San Francisco:*

The eruption of herpes zoster, which consists of vesicles upon inflamed bases, is characterized mainly by its limitation to the portion of skin that is supplied by the affected spinal ganglia. Head distinguishes two forms of zoster. The first is merely a symptom of some more general nervous disease and it is called, therefore, symptomatic zoster. The second is a disease *sui generis* and has been termed acute specific zoster. . . .

*From an article on "The Demonstration of Dilatations of the Descending Thoracic Aorta" by Charles Miner Cooper, M. D.:*

The descending thoracic aorta is the direct continuation of the aortic arch, and it traverses the posterior mediastinum. It begins at the lower border of the fourth dorsal vertebra and ends by becoming the abdominal aorta at the level of the twelfth dorsal vertebra. At its commencement it lies to the left of the middle line, but as it proceeds downward it inclines inward, approaching a mesial position at its termination. . . .

*From an article on "Pityriasis Rosea" by Douglass W. Montgomery, M. D., San Francisco:*

In pityriasis rosea, as usually met with, the patient applies for advice on account of a rosy, blotchy rash, well distributed over the body. The rash consists of slightly elevated, light red blotches, usually about the size of those seen in measles or in the roseola of syphilis. . . .

*From an article on "The Pathology and Treatment of Tetanus" by T. C. McCleave, M. D., Berkeley, Cal.:*

A year ago, in discussing a paper on tetanus before this Association, I called attention to certain newly discovered facts regarding the manner in which the tetanus toxin reaches the spinal cord, and I stated at that time that these discoveries would no doubt lead to improvements in the methods of treatment of this dreadful affection. . . .

*From an article on "The Requisite Laboratory Equipment for the General Practitioner" by Ray L. Wilbur, M. D., Stanford University:*

In these days of the multiplicity of clinical instruments and clinical tests, it becomes of some importance to the general physician to know how much actual equipment is necessary for laboratory work and how far his time and experience will let him go before he needs to call for the services of a laboratory expert. In the present-day medical education

enough stress is laid upon all forms of laboratory work so that the average graduate is well equipped mentally for all the ordinary tests. . . .

*From an article on "Gastroenteric Autointoxication—Its Recognition and Significance, and Its Relation to Arterial Hypertension" by W. A. Briggs, M.D., Sacramento:*

The physiologic and the pathologic problems of digestion and of the digestive tract are obviously fundamental. Not only are they fundamental, but, both from a theoretical and from a practical viewpoint, they are anthropologically universal. They implicate every tissue and every function—nay, more, the very destiny of nations. Many a philosophy is tinged with black bile, and many a world policy is implacably determined by the colon bacillus. . . .

*From minutes of the meeting of the San Francisco County Medical Society:*

Meeting of the Directors of the County Medical Society.—Meeting called to order at 8:20 p. m., February 13, 1906, President Terry in the chair. Those present were: Doctors W. I. Terry, D'Arcy Power, J. H. Barbat, P. K. Brown, C. M. Cooper, D. Tait, W. S. Thorne, F. B. Carpenter, William Ophüls, George Blumer, Henry Gibbons, Jr., H. Morrow, C. Levison, H. M. Sherman, P. M. Jones, George Evans. . . .

Dr. P. M. Jones reported for the committee appointed to consider the advisability of having more frequent meetings as follows: . . .

Third: That arrangements be made for meetings to which prominent attorneys, judges, etc., be invited, and also other meetings to which representatives of the ministerial profession be invited. . . .

Doctor Jones moved that the secretary be instructed to purchase a scrap-book and in that scrap-book there be pasted any clippings from the daily papers referring to any of the members of this society. A space is to be left after each clipping in which the member involved can write his defense. This scrap-book to be placed in the library for the inspection of the members. Motion carried. . . .

## DEPARTMENT OF PUBLIC HEALTH

*By GILES S. PORTER, M. D., Director*

**Full-Time Health Units Growing.**—There are now fourteen counties in California each of which has its health department organized upon a full-time basis, with a trained health officer in charge. These counties are: Contra Costa, Yolo, San Francisco, San Joaquin, Stanislaus, Madera, Monterey, San Luis Obispo, Santa Barbara, Los Angeles, Orange, San Diego, Riverside, and Imperial.

There are extensive activities launched in both Kern and Ventura counties for the formation of county health units in each of these counties. In Ventura County, a committee of five residents has compiled a voluminous report of its investigations into the advisability of establishing a full-time health unit in that county. This committee was appointed in April 1930, and since that time visits have been made to San Luis Obispo, Monterey, San Joaquin, Fresno, and Tulare counties. As a result of this investigation, the committee recommends that such a health unit be organized in Ventura County. The findings of the committee are summarized as follows:

### FINDINGS

1. The success or failure of a public health department depends primarily on its head.
2. The head of the department should have full responsibility in order that success or failure may be definitely fixed.
3. Excepting, perhaps, the very few populous and wealthy counties, public welfare can be better served by a county-wide health organization, whether it be unit or district organization, than by a number of local organizations that lack coördination.

### FULL-TIME OFFICER

4. Except in counties of limited population and wealth, health service should have full-time health officer with special qualifications for the work.
5. In many counties, among them Ventura, an efficient county-wide health organization can be set up that will cost very little more than the total cost of present inefficient set-ups.
6. The head of the department and the various employees should not be subjected to irrelevant political influences.
7. There are certain inherent elements in each which make it very difficult for health departments and school departments to work in complete harmony. These difficulties can be reduced to a minimum, and practically eliminated, when the two departments get together and study their problems with an earnest desire to solve them fairly.
8. There seems to be no disposition in any of the counties that have set up fairly efficient health departments to dispense with them even though the service is still limited.

### MEETS APPROVAL

9. Heads of health departments whom we have consulted favor the district plan of organization.
10. The law permits a maximum tax levy of 15 cents on the hundred dollars under the district plan. After checking over the cost of present health service in Ventura County we are of the firm opinion that a tax not to exceed five and one-half cents on the hundred dollars would be sufficient for the successful operation of a health district for the county. The amount raised by this tax would be less than one cent more on the hundred dollars than is now being paid out by the county, the cities, and the school districts. Instead of health service covering but a limited field we would have comprehensive, unified, and efficient service for the entire county.

**Dr. G. S. Porter, Director of Department of Public Health.**—Governor Ralph has appointed Dr. Giles S. Porter of Los Angeles as director of the State Department of Public Health and he assumed the duties of the office on January 29. He succeeds Dr. Walter M. Dickie, who has been the administrative head of the department since August 1920. Doctor Porter has been assistant health officer of Los Angeles for many years, having first become associated with the Los Angeles City Health Department in 1920. He served in the Medical Corps of the United States Army, 1918-1919. He came to California in 1914, and before that time he practiced medicine in Arkansas, where he was a member of the State Board of Medical Examiners.

**Imperial County Protects Against Diphtheria.**—Under date of January 19, Dr. Warren F. Fox, health officer of Imperial County, states that a total of 1221 immunizations against diphtheria have been given by the county health department. He stated further, that by the end of the month all of the rural schools will have been visited by the health officer and nurse.

## CALIFORNIA BOARD OF MEDICAL EXAMINERS

By CHARLES B. PINKHAM, M. D.  
*Secretary of the Board*

News Items, April 1931

"Attorney General U. S. Webb has given an opinion to Governor Rolph to the effect that the State Board of Chiropractic Examiners is a legally constituted body. This sets at rest rumors that the board was illegally constituted and that chiropractors licensed since 1923 held their licenses illegally" (*Sacramento Bee*, February 25, 1931).

"Licensing and regulation of Christian healers and practitioners is provided in a bill by Senator Harry E. Carter of Wilmington. . . . Each applicant would have to hold credentials from an incorporated church, school, college, institution or university that teaches Christian healing 'indicating that said applicant is duly qualified as a Christian healer or practitioner to relieve the sick and afflicted whether spiritually . . . or physically by prayer and imposition of hands, anointing with oil' . . ." (*Hollywood News*, February 4, 1931).

The records show that on January 30, 1930, Buren L. Corley, D. C. (Corley Health Institute, San Francisco), pleaded guilty in San Francisco to a charge of violation of the Medical Practice Act and was sentenced to serve six months in the county jail, suspended on condition that he discontinue further violation. "It was agreed that he would in the future in all radio talks, on his signs, and elsewhere, comply with the law and designate himself as he should be, i. e., a chiropractor."

According to reports, Dr. D. M. Angus, licensed in California many years ago, and who, the record shows, pleaded guilty to a charge of abortion in the State of Washington and was given a six months' suspended sentence on May 15, 1929, is again reported to be held in jail for investigation in connection with an alleged illegal operation.

"Dr. F. A. Bonaventure, Santa Rosa physician, must return to Columbus, Ohio, to answer to a federal indictment charging violation of the Harrison Narcotic Law, United States Commissioner Ernest E. Williams decided yesterday" (*San Francisco Examiner*, February 20, 1930).

"After five minutes of deliberation, a jury in United States District Judge Paul J. McCormick's court yesterday found Dr. F. E. Cramer, Hawthorne physician, guilty of violation of federal narcotic laws. Cramer was charged with selling fifty grains of morphin to an addict. Under the law the maximum penalty of five years' imprisonment, or a fine of \$2000, or both, may be imposed" (*Los Angeles Examiner*, February 27, 1931).

Special Agent Davidson reported that on March 25 Harold E. Frantz, operating the "American Herb Company," pleaded guilty in Stockton to a violation of Section 17 of the Medical Practice Act and was given a suspended sentence with a warning that he was not to again engage in the sale of herbs in violation of the law.

"Dr. William C. Fiske, seventy, of Hermosa Beach must abstain from the practice of medicine as a condition of being given ten years' probation by Superior Judge Charles W. Fricke on a manslaughter charge, to which the physician pleaded guilty after the death of Vera Nelson, nineteen, from an illegal operation" (*Los Angeles Illustrated Daily News*, February 25, 1931).

"Dr. H. M. Every, Oakland physician, has been appointed assistant physician at San Quentin prison to succeed Dr. E. Edwin Garfinkle, who recently resigned . . . (*Oakland Tribune*, February 28, 1931).

The latest victim of the eyesight swindlers is reported as S. P. Lindgren, Van Nuys, who recently reported to the police that he had parted with \$250 following the old radium drop swindle, of which the Board of Medical Examiners has warned the people of this state on many occasions.

"Dr. Harry Frost of New York, confessed representative of an 'eastern diploma mill,' pleaded guilty in city court today to illegal sale of a chiropractic diploma and was sentenced to one year in the city work house. Frost was arrested yesterday through the efforts of President John Stevens, who posed as an art metal salesman and made down payments on chiropractic and medical diplomas. . . . Fictitious diplomas were reported sold by Frost for amounts ranging from \$500 to \$1000" (*United Press Dispatch*, dated St. Louis, January 24; printed in the *Berkeley Gazette*, January 24, 1931).

"Arthur Jay Green, forty-one, maintaining offices at 666 Post Street, was arrested by J. W. Davidson, inspector of the State Board of Medical Examiners, and charged with violation of the State Medical Practice Act. Green is said to have used agents to dispose of medicines" (*San Francisco Examiner*, February 10, 1931).

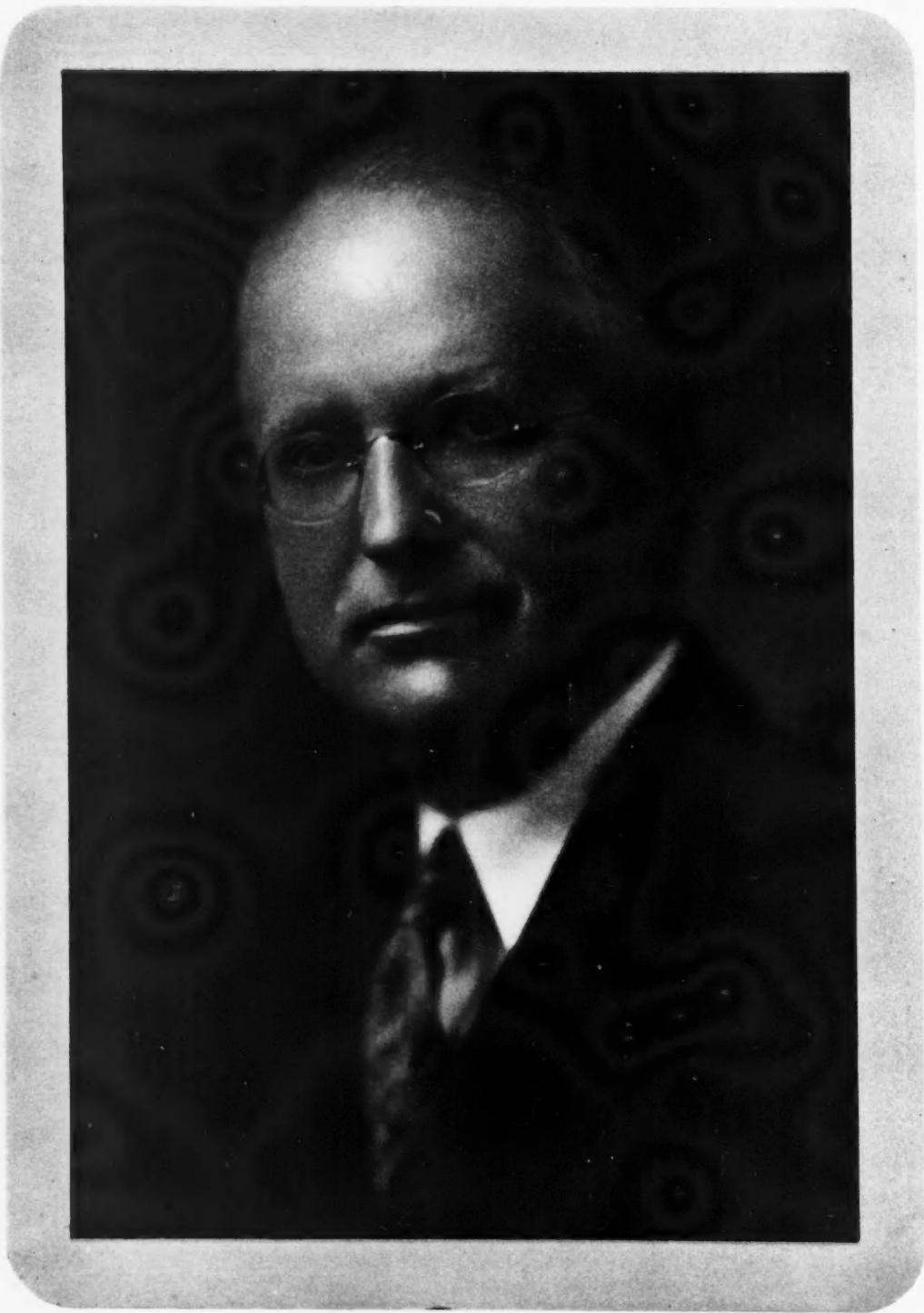
C. E. Hilton, reported as distributing business cards reading "American School of Pedal Osteotomy" and circulating newspaper advertisements reading "Foot Specialist, Free Schooling, Diploma . . ." on March 5, 1931, was found guilty by a Los Angeles jury of violation of the Medical Practice Act and was sentenced to pay a fine of \$300 or serve six months in the city jail, sentence being suspended on condition that he does not use the prefix "Dr." in any sign or advertisement in connection with his business.

Special Agent Davidson reports that Frank Lee, Korean herbalist, associated with Frank and Wong, herb specialists, Berkeley, on March 10 was found guilty in a Berkeley court of violation of the Medical Practice Act and was sentenced to pay a fine of \$500 or serve one day in the county jail of Alameda County for each \$1 not paid, not to exceed 180 days in prison. The report relates, "This man has been associated with W. Y. Wong, whom we recently prosecuted successfully in Oakland."

According to reports, H. Lynn Staley, licensed Los Angeles chiropractor, advertising, "Dr. H. Lynn Staley, birth marks, blemishes, skin diseases, 1776 Griffith Park Boulevard, Los Angeles, California," without announcing himself as a chiropractor, and also reported as operating a concern known as the Hollywood Cell-oids Company, alleged to be "attempting to sell through the use of the United States mails some sort of mineral salts which he claims 'has been successful in cancer' . . ." was on February 13, 1931, sentenced to pay a fine of \$200 or serve sixty days in the city jail on a charge of violation of the Medical Practice Act. The fine was paid.

An individual giving the name of Harry Turner, whose claim that he is a graduate of the University of Oregon Medical School in 1913 and licensed in Oregon in 1914, was found false, was recently confined in the city and county jail of San Francisco on a charge of issuing bad checks. He claimed to have been born in Juneau, Alaska, September 11, 1889, and that his Oregon license was revoked, following a conviction of having performed an illegal operation. The records, however, show such a license never existed.





**LYELL CARY KINNEY**  
*President, California Medical Association*  
1930-1931